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Towards an Improved Understanding of Organisational Learning

*Why the Process is Fundamentally Different from that of Individual Learning; Why it is
Inherently Challenging to Establish; and How it may be Enhanced*

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Towards an Improved Understanding of Organisational Learning:

Why the Process is Fundamentally Different from that of Individual Learning; Why it is Inherently Challenging to Establish; and How it may be Enhanced

James Christopher Beale

A thesis submitted to the University of Bristol in accordance with the requirements of the degree of Engineering Doctorate in Systems in the Faculty of Engineering

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Abstract

Organisational learning occurs where an organisation changes its collective behaviour as the result of a change of experience. The “Learning Organisation” is a related but distinct concept and field of research, differentiated along both theoretical and pragmatic axes. The two schools of theory (organisational learning and the Learning Organisation) have generated huge bodies of research and literature but have yet to succeed in changing global working practice despite a widespread belief in the power and importance of learning in or as organisations.

Whilst there is no unifying theory of collective learning, there are discernible common themes apparent in the range of models that have been proposed to describe the organisational learning process. A key example is the recurrent use, implicitly or explicitly, of David Kolb’s (individual) experiential learning cycle as a foundation for modelling organisational level learning. The research described herein explores and challenges the Kolb-esque cycle in operation and finds significant anomalies between the organisation and the individual in their characteristics as subjects of learning. The argument is advanced that the two types of learning are in fact fundamentally dissimilar on the grounds that individual learning has a strong involuntary level (as well as voluntary) which is weak to absent at the organisational level. This, coupled with evidence showing a “motivation gap” to support the common interest by learning collectively, does much to explain why a learning revolution has yet to occur.

This thesis contributes to the collective knowledge by offering a novel model for organisational learning that both addresses the conflicts noted in existing literature and incorporates key observations from the empirical research studies conducted. In congruence with the model, the influence of contextual factors on learning culture is also demonstrated, and the importance of group learning in delivering organisational learning is explained.

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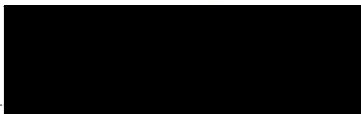
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Most of all to my family: for cheerleading and unwavering support, for patient and tough love in alternating and appropriate measures, and for being the start and finish of all of the things I over-promise.

Author's Declaration

I declare that the work in this dissertation was carried out in accordance with the requirements of the University's Regulations and Code of Practice for Research Degree Programmes and that it has not been submitted for any other academic award. Except where indicated by specific reference in the text, the work is the candidate's own work. Work done in collaboration with, or with the assistance of, others, is indicated as such. Any views expressed in the dissertation are those of the author.

Signed:

A black rectangular box redacting the signature of the author.

Date: 7th November 2018

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Glossary and Acronyms

ADIIEA	Automation, Disruption, Investigation, Ideation, Expectation, Affirmation (model)
API	American Petroleum Institute
CDM	Construction (Design and Management) (regulations)
CEO	Chief Executive Officer
CLD	Causal Loop Diagram
CRM	Customer Relationship Management
DLOQ	Dimensions of the Learning Organization Questionnaire
EAME	Europe, Asia, Middle East
ELT	Experiential Learning Theory
EngD	Engineering Doctorate
EPC	Engineer, Procure and Construct (contract)
EPPI-Centre	Evidence for Policy and Practice Information and Co-ordinating Centre
GMF	Group Motivation Factor
HR	Human Resources
HSE	Health, Safety and the Environment
IT	Information Technology
LPP	Legitimate Peripheral Participation
LSI	Learning Style Inventory
LTI	Lost Time Incident
MAIB	Marine Accident Investigation Branch
MARPOL	The International Convention for the Prevention of Pollution from Ships
MKO	More Knowledgeable Other
MIT	Massachusetts Institute of Technology
NHS	National Health Service
OADI	Observe, Assess, Design, Implement (model)
OADI-SMM	Observe, Assess, Design, Implement – Shared Mental Models (model)
OGTS	Oil and Gas Technical Solutions
OLSM	Organisational Learning Systems Model
OMF	Organisational Motivation Factor
PBO	Project-Based Organisation
QMS	Quality Management System
RE	Research Engineer (The Author)
RQ	Research Question
SAL	Student's Approach to Learning

SD	Standard Deviation
SECI	Socialisation, Externalisation, Combination and Internalisation (model)
SOS	Safety Observation System
SYLLK	Systemic Lessons Learnt Knowledge (model)
TMS	Transactive Memory System
UCL	University College London

Part 1 – Background

1. Introduction

Organisational learning and the Learning Organisation have been popular themes in organisational research and management literature for more than thirty years, yet there remains little consensus on either, or even on the degree to which they are distinct.

Schools of thought on organisational learning are divided on a number of key fault lines, including: the proportion of members who need to be affected by the learning in order for the organisation to have learnt; the hierarchical level of the organisation that learning actually takes places; and what types of organisational or sub-organisational change constitute learning. Whether it is a constant state which can lie dormant or even entrench negative practices, or an intermittent and deliberate condition to be maximised is similarly open to debate.

The “Learning Organisation” concept is broadly credited to Senge (2006; 1st Edition 1990) and has inspired manifold related literary works (including a journal of the same name), consultancies and management practice, and academic organisations. In recent years however, questions have been raised as to the longevity and continued relevance of the theory (e.g. Pedler and Burgoyne, 2017), suggesting that it may have run its natural lifecycle and been superseded by offshoot ideas. As an answer to the question of “how our organisations can become better”, however, it remains persuasive, even intuitive, to many.

This thesis describes a multi-phased research exercise to enhance understanding of the impediments to organisational learning and the development of the Learning Organisation, and to explore the factors that govern the successful realisation of each. It proposes a novel model for organisational learning that recognises and can be used to describe the inherent and context-specific challenges. It also identifies the importance of motivation as a key (and often overlooked) driving force and

demonstrates how team or group learning can be leveraged to provide this motivation.

1.1. Industrial Context

This research was conducted primarily within the oil and gas industry but the setting is largely incidental to the theoretical basis and research objectives in that they did not relate directly to the services provided by OGCom. It is submitted that it could have taken place in any industrial context, and central themes are deliberately expanded to others in a late research phase in order to test generalisability. However, the fortunes of the initial host industry came to have a significant bearing on the path of the project and the industrial context is therefore an important consideration.

Between 2010 and early 2018, the Research Engineer (RE) was an employee of “OGCom”¹ (or “the Company”); a multi-national engineering and management consultancy serving primarily the oil and gas industry. At the outset of the research period, the company was owned by parent “OG Group” and it provided through-life engineering support for oil and gas developments. A number of complementary business streams were maintained as distinct within the Company and further supplementary service lines were provided by sister companies within OG Group.

At the time when the research exercise described herein was first proposed in 2012, the Company had recently undergone a global reorganisation process and was engaged in internal restructuring with the aim of standardising processes across the component companies and their various offices. The RE joined the Engineering Doctorate (EngD) Programme as a means of learning more about how to create and sustain effective systems within an organisation, to provide a benchmark for the Company’s development of ideas and systems, and to focus and progress a number

¹ Anonymised for confidentiality

of overlapping internal initiatives which prevailed at the time. During the first and second years of study, as is often the case during the investigation of systems problems, the Company initiatives and priorities changed. So too did the Company, in that it moved towards greater integration with the sub-group of companies to which it was sister, and in that its internal structure underwent further changes.

Towards the end of 2014, it was decided by the RE and supervisors (both industrial and academic) that organisational learning was an appropriate focus for the intervention within the Company, as well as a dynamic academic discipline. The rationale for focusing on learning from the Company's point of view was that it would provide a platform and channel through which other issues could, and perhaps would organically, be addressed. From an academic point of view, understanding organisational learning offered a major step towards understanding organisations and other types of organisational change.

The Company and its parent group have since continued to evolve and restructure, most notably in that (a) the group has continued to move towards integrating into a smaller number of legal and trading entities, and (b) in that it was forced to respond to a dramatic downturn in business due to the sudden and prolonged decline of global oil prices in 2014/15. Both of these factors have influenced the outcome and indeed the success of the research described herein; ultimately both have provided an uncommon and illuminating lens through which to view Company and organisational learning practice.

The research plan described hereafter was developed following consideration of applicable methodological approaches to undertaking research within a host organisation (see Chapter 3), and with the objective of exploring organisational learning dynamics within OGCom in particular.

1.2. Research Narrative

This chapter can be considered a chronological precis of the sequence of research steps undertaken, contextualising the outcomes of each and justifying the progression to the next. For detailed assessment of appropriate methods and principles governing their application, the reader is directed to Chapter 3 ("Methodology"), and for a full review and critique of previous literature; Chapter 2 ("Literature Review"). Herein, the emphasis is on explaining what was done when it was done, and why.

This narrative is presented diagrammatically in Figure 1.1 (overleaf).

1.2.1. Initial Consultation

In early 2013, in an effort to understand the nature of the organisation better and identify appropriate research questions, a series of interviews was conducted with Company project managers, senior project managers and line managers. This exercise was entirely exploratory and inward-looking in nature and as such it is considered a precursor to, rather than a step in, this research. The method used therefore does not merit detailed justification; however, the relevant principles established in Chapter 3 ("Methodology") are applicable and indeed were applied.

A group of 21 project managers/project management personnel were approached, of whom 18 participated. Participants came from a range of backgrounds in terms of experience and longevity with the company. The group was predominantly male (16:2) and British (15:3), with a mean age of 52.1 (SD 8.5 years). Mean length of time with the company was 12.4 years (SD 7.8 years) and mean number of years' experience in a project management capacity was 14.9 (SD 8.0).

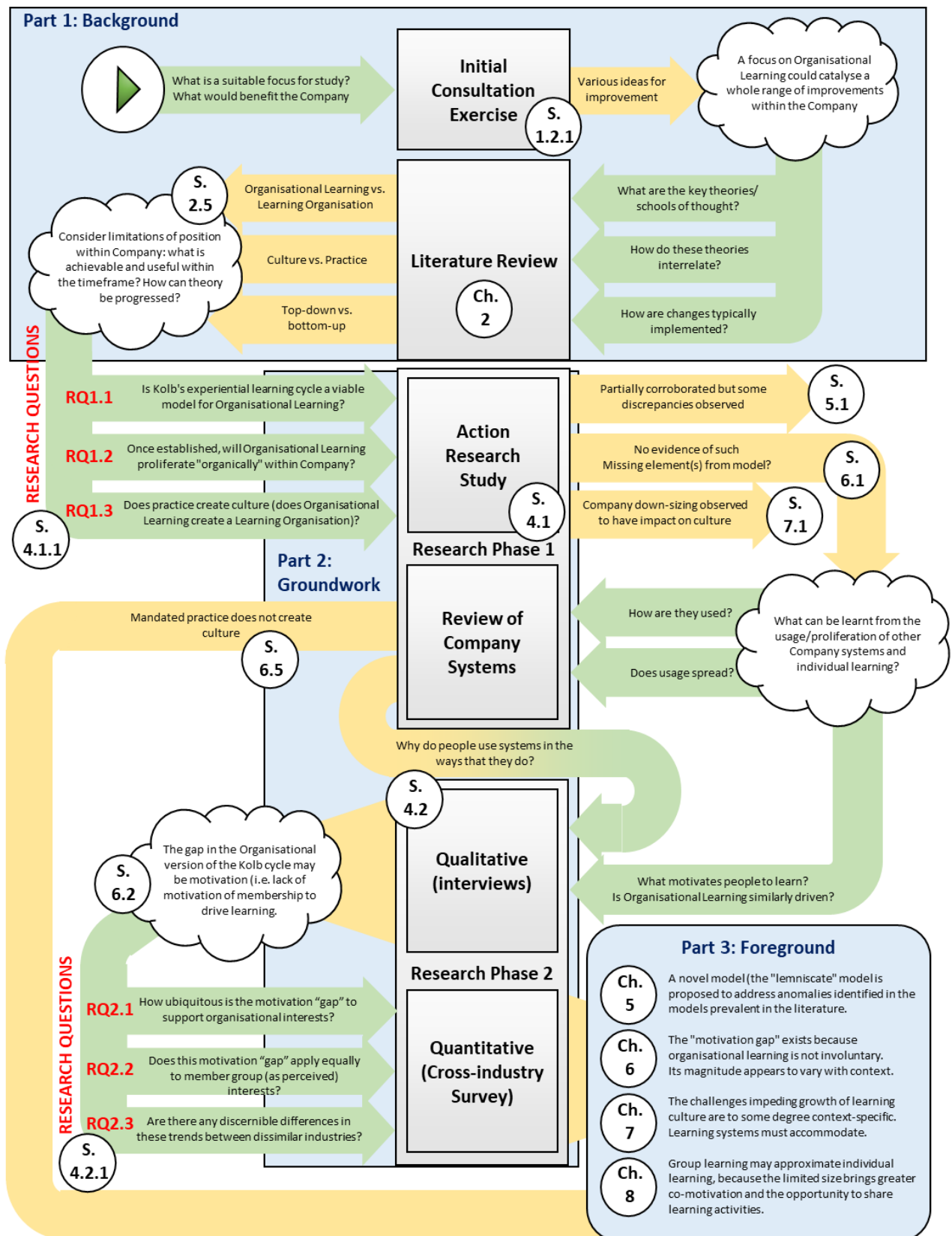


Figure 1.1 Research Narrative Schematic

Interviews were semi-structured in that a number of topics were introduced and participants were encouraged to expand upon:

- What the Company was considered to do well;
- What the Company was considered to do poorly,
- Suggestions/opportunities for improvement.

Discussions were allowed to range freely, and consequently were accorded varying levels of detail per participant. It should be noted of course that impressions/ problems reported by participants were perceived rather than necessarily factual.

Key themes reported are summarised below. This list is only a subset of topics discussed; chosen (main focus aside) because they echo through some of the other stages of the work.

Knowledge Management

The sharing of collective knowledge was flagged as something with which the Company was perceived to struggle. This was considered problematic due to the arrangement of the Company as a series of isolated pockets with little visibility or interaction between projects. At the time this was exacerbated by the location of some departments in a separate building, and by the participation of different geographical offices on common projects. This challenge is acknowledged in the wider literature in that certain industries, including engineering and construction, necessitate a “project-based” organisational structure due to project scale, timescales, uniqueness etc. (Bartsch *et al.*, 2013). Project-based organisations (PBOs) have different knowledge diffusion characteristics to ‘normal’ companies, with identified causes including (Vincenzo and Mascia, 2012; Van Donk and Riezebos, 2005):

- Project scope is unique by definition so repeatability of circumstances is limited;

- Project autonomy, dispersion and self-preoccupation impedes knowledge transfer;
- Projects may compete for resources and offer little incentive to share lessons;
- Acquired knowledge typically disperses at (or before) demobilisation.

It was also frequently observed that the Company did not share lessons learnt effectively or take opportunities to request and share client feedback.

Resources/recruitment

An “experience gap” was noted between the senior levels in the building and the more junior engineers. Some participants reflected on the absence of industry engineers of a particular age band (a “lost generation”), opining that the oil price crash of the 1980’s had forced many young engineers at that time into different industries. As a result, a dearth of engineers of a certain experience level was speculatively predicted to be due in 10 (or so) years’ time. This identified loss of a generation of engineers is of interest to this project because the changes occurring in the industry within the same timeframe may have initiated a similar exodus.

Training and Development

Several participants suggested that the Company should involve graduates more with management processes and allow them to work more closely with senior staff. Almost all stated that they were very happy to support the development of juniors. It was widely considered that the Company should be providing more opportunities to develop experience, perhaps to the extent of moving graduates around to work on projects in different phases. This was acknowledged to be dependent on the Company’s workload; it was speculated that movement might become easier with the greater integration of the different sister companies. The subject of leadership training was frequently raised, with ideas mooted as to how the Company should be planning for

succession, identifying resources with potential and developing future leaders.

Organisational Development/Learning

The changing nature of the Company (even at that time) was met with a mixture of optimism and scepticism. Some saw opportunities in the anticipated consolidation and growth of the Company; others saw difficulties and uncertainty. Management of interconnectivity was identified as a problematic area; would the Company (as was at the time) be “swallowed up” in the merging parent organisation? Participants speculated at length on how the growing organisation should be arranged, governed and maintained, and the degree to which practices and systems should be standardised across all entities.

Another widely held discussion under this heading focused on the diversity of knowledge that would be brought together as a combined group. The possibility of expanding the range of services offered was considered a positive effect of integration, but the associated requirement to capitalise on the knowledge and experience of a wider membership was seen as a challenge.

Research Focus

These topics were discussed at length with the RE’s industrial supervisor and other senior management level stakeholders. It was agreed that a logical primary focus was organisational learning for the following reasons:

- Learning and retention of tacit knowledge were seen as essential for organisations to remain competitive in knowledge-based contexts (i.e. consultancy).
- Improved organisational learning capacity could be expected to have knock-on organisational benefits, in that it is synonymous with continual improvement.
- Whereas other activities to improve practice might require dedicated resources,

organisational learning was seen to have the potential to enrol employees “organically” and develop a community of collaboration and self-improvement.

- Organisational learning mechanisms were expected to provide a source of continuity and stability in discontinuous project work.
- Learning as an organisation can deliver positive benefit from all projects undertaken, regardless of outcome. In fact, greater learning opportunities arise from less successful projects.

Thus, the stage was set for the research to be planned and implemented, and expectations at that time were high for lasting and positive change.

1.2.2. The Focus

As described in Section 1.2.1, organisational learning was selected as a research focus following consultation with Company senior project managers as well as Senior Management. Organisational learning and the Learning Organisation were both concepts of interest to the Company; they therefore became the subjects of the literature review detailed in Chapter 2. The main insights that the RE and the Company hoped to gain from the literature were:

- An understanding of the key theories relating to the two concepts;
- An understanding of the nature of the relationship between the two concepts; and
- A grounding in best practice for establishing one or both of the two concepts for effective application within the Company.

A key aim of the EngD programme being to deliver benefit to the host company, it was accepted by all interested parties that development of organisational learning (and/or Learning Organisation) capacity within the Company could be conducted in such a way as to also further the state of knowledge on the same topic.

As with many other engineering companies and consultancies, the main mechanism by which learning from Company experience was conducted at OGCom was a “lessons learnt” system. Historically, lessons learnt workshops were conducted at the end of certain projects and registers kept but not collated or subjected to further scrutiny (typically). In 2012 however, an online platform was established to act as a single, open-access repository for logging, processing and actioning of all lessons learnt. This system was underused and few people were aware of its presence or potential. Learning activities continued to vary from project to project and there was no evidence of coordinated attempts to alter practice to accommodate observations or suggestions made.

Other Company learning or training mechanisms included:

- An online system for delivery of training modules.
- An opportunistic programme of “learning lunch” sessions whereby internal or guest speakers would present on topics of their choice.
- A dedicated training budget which could be apportioned to individuals on specific application.
- A focus on training requirements during annual staff appraisals.

1.2.3. Research Phase 1

Research Phase 1 was inspired by the following findings from the literature review:

1. That the concepts of organisational learning and the Learning Organisation are ideologically distinct and have both given rise to schools of theory and research that have different ontological perspectives and aims. The concepts are often improperly distinguished, or even used interchangeably (e.g. Nyame-Asiamah and Patel, 2009), albeit (it is argued herein) erroneously so.

2. That the relationship between organisational learning and the Learning Organisation is analogous to the relationship between practice and culture (qua ideas, customs and social behaviour).
3. That efforts reported towards the establishment of Learning Organisations in existing companies are typically touted as successful, but also that the specific merit of such an enterprise is difficult to demonstrate objectively. That learning is beneficial at individual and organisational level seems to be generally accepted as a given, often being used to justify significant expenditure

The research plan (later referred to as “Research Phase 1”) that emerged from these combined findings was to use action research to develop the organisational learning capacity of the Company whilst also evidencing the development of learning culture specifically by enhancing learning practice.

The aim was to progress the collective understanding of organisational learning by exploring three research questions:

Research Question 1 (RQ1.1)

Can Kolb’s experiential learning theory model (see Chapter 2) for individual learning be “scaled” to provide a faithful and demonstrable model² for the organisational learning process?

Research Question 2 (RQ1.2)

Are organisational learning mechanisms that channel natural individual learning sufficiently intuitive to proliferate organically once established (the mechanism in question being the Kolb-esque cycle referred to in RQ1.1)?

² NB it is not suggested that only a single model can illustrate the phenomenon. As with individual learning, it is possible that multiple mechanisms coexist.

Research Question 3 (RQ1.3)

Does learning practice create learning culture; i.e. does enhancement of organisational learning capacity result in the emergence of/an increase in qualities evidencing the Learning Organisation disciplines as per Senge (2006)?

A programme of research arranged into three, six-month cycles was devised and longitudinal metrics (qualitative and quantitative) were established for monitoring the expected effects of action research measures applied. This included a periodic online questionnaire completed by a group of 95 (at the outset) participants gauging perceived emergence of disciplines and attitudes towards organisational learning. Further details are provided in Chapter 3.

1.2.4. The “Curveball”

As it transpired, the planned research schedule happened by accident to coincide with a period of substantial and prolonged change within the Company and also the wider industry. First came a crash in oil prices leading to a major curtailing of development and trading across the industry. Concurrently, although not necessarily consequently, the Company underwent a programme of restructuring and organisational change that affected (amongst other things) the decision-making process and authority to implement localised change. Finally, and partially as a result of both of these dynamics, personnel numbers fell dramatically.

These factors influenced the continuing research plan in the following ways:

- Some of the longitudinal metrics being used became unsustainable. For example, whilst it had been previously possible to gather data on training applications and expenditure, as the downturn took hold all non-essential non-reimbursable budgets were suspended, including the training budget.

- The decrease in personnel numbers had a proportional effect on the size of the group completing periodic questionnaires, which fell (by various means) by 60% over the duration of the research to just 38 remaining participants.
- Action research measures were impeded by changes to the management structure of the office and Company.
- Staff and contractors alike became insecure and protective over their workload and project roles, obstructing the sharing of knowledge and undermining the common interest.
- The changes implemented as part of the action research plan were dwarfed in terms of influence on practice and disposition of personnel by the changes made to the management structure, to job security and to the focus of day-to-day business³

These factors are now explained in greater detail to give an idea of the scale of their influence.

Industry Downturn

At the end of 2014, the previously buoyant global crude oil prices dropped sharply, and continued to fall throughout 2015. The effect on the oil and gas industry was muted at first, and then dramatic. Many offshore exploration, recovery and infrastructure projects were shelved or cancelled, greatly reducing the body of work available to engineering consultancies like and including the Company. The effect is shown on a temporally localised scale in Figure 1.2.

³ These subjective assertions are substantiated more expansively in Chapter 7.

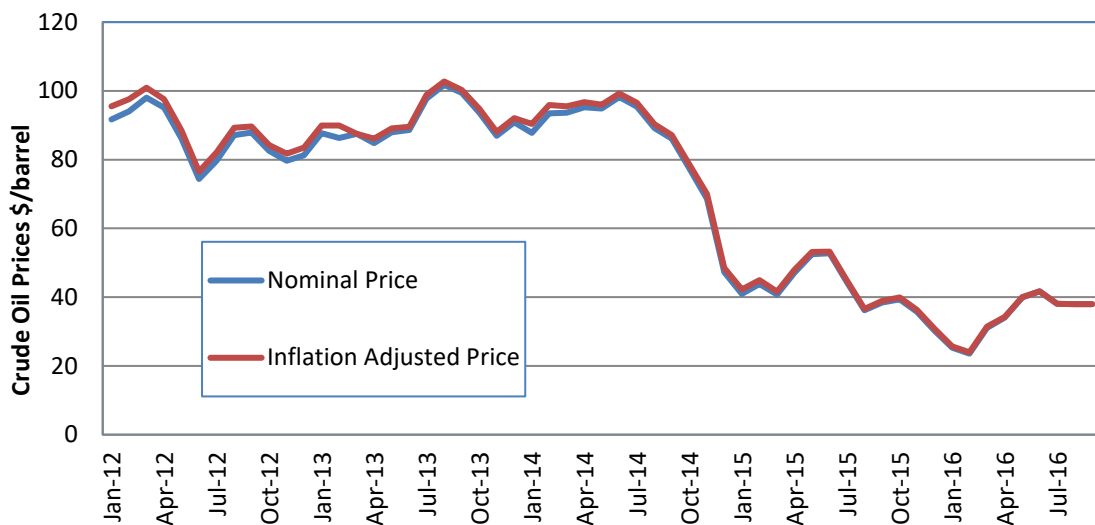


Figure 1.2 Monthly Crude Oil Prices per Barrel from 2012 to 2016⁴

Organisational Change

The recent history of the Company is somewhat complicated, and changes that occurred during the research period are better understood if the account starts two years earlier, in 2010. At that time, OGCom was the largest member of a cluster of five sister companies trading under a common group banner. That cluster in turn was part of a larger parent company (OG Group) which also owned a number of other complementary businesses. The sister companies increasingly shared offices and resources but each had its own distinct identity and management structure.

In 2013, the cluster of sister companies merged to become a single limited company under the same name (OGCom), although within the organisation the prior entities remained as distinct business streams. Concurrently, the internal organisation of the Company changed so that each business stream had a regional as well as local structure. This (so-called) matrix formation imposed 'horizontal' and 'vertical' reporting lines to the management of each stream.

⁴ https://inflationdata.com/Inflation/Inflation_Rate/Historical_Oil_Prices_Table.asp accessed 3rd May 2017.

In 2014, OG Group consolidated its businesses into three branches, of which OGCom constituted the engineering branch, and rebranded to provide a common identity across all three. Within the Company, the five business streams became eight, and the regional management structure was further consolidated, giving the regions greater accountability for their performance. Legal entities were also consolidated, and contractual benefits standardised.

2015 saw the appointment of a new OGCom CEO, and a newly revised structure that created an Operations Director role in each of the offices and rationalised Company support services. OG Group completed a number of strategic acquisitions with the aim of diversifying the overall service offering. Legal entities were consolidated further so that regional offices shared a single trading entity. Late in the year OG Group also appointed a new CEO, and the Regional Manager of the EAME (Europe, Asia, Middle East) region resigned his post. Consolidation of support services between offices and trading entities continued.

In 2016, OG Group continued its programme of acquisitions, and consolidation of support services. This latter dynamic was also evident at Company level, with common access points established for human resources, IT, accounts etc. OG Group announced the roll-out of a new global organisation which would merge existing brands and services across two global regions with a further specialist group called 'Oil and Gas Technical Solutions' (OGTS). OGTS then consisted primarily of OGCom as was; this change came into effect in July 2016.

At ground level, accompanied as they were by the reduction in Company numbers, these changes gave rise to some disorientation, disenfranchisement and general apathy towards organisational change in general.

Personnel Numbers

The steady reduction in Company personnel numbers reduced through the research period was attributable both to the industry downturn and resulting dearth of work, and also to the streamlining of management roles. A number of mechanisms contributed to this outflow, including non-replacement of personnel, voluntary redundancies, non-renewal of contracts, involuntary redundancies and termination of contracts. Figure 1.3 shows (smoothed) trend lines for staff, contractor and total personnel numbers over the research period.

Contractor numbers reduced more quickly than staff numbers towards the end of the period as efforts were made to prioritise staff utilisation and reduce redundancies. It should be noted that wide-reaching efforts were also taken to reduce Company outgoings in all areas in order to maintain positions for staff and contractors alike for as long as possible. Ultimately however, a consultancy only has so many assets and, inevitably, a reduction in business must result in a reduction in personnel.

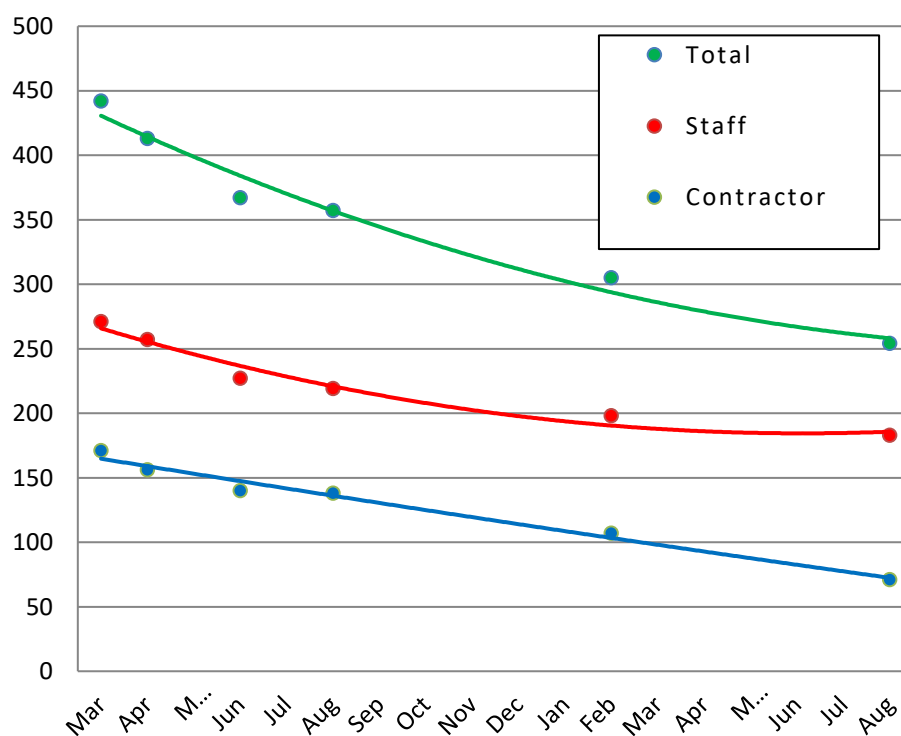


Figure 1.3 Company Personnel Numbers during Research Period

1.2.5. Research Phase 2

Despite these influences, significant evidence was gathered on the topic of RQ1.1, in that all the elements of the Kolb-esque cycle expanded were repeatedly observed in operation (with some qualifications). RQ1.2 was not conclusively answered, in that utilisation of the established cycle failed to spread “organically” through the Company. The data relating to RQ1.3 were more observably misdirected by the Company outlook and deterioration in morale. Whilst the actual supposition was unsubstantiated either way, a relationship was discerned between the perceived prospects of the Company and its personnel and their support for learning and for the interests of the organisation in general.

The exercise served as an interesting case study on the deleterious effect of contraction on organisational learning. However, there was more to be explored on the subject of RQ1.2 and the failure of the Kolb-esque learning cycle to proliferate. Learning, contemplation and diversification could potentially have helped a company under pressure and by extension its personnel; why had this possibility not been embraced? A second, mixed methods research phase (“Research Phase 2”) was conceived, to include both qualitative and quantitative aspects. This study was to follow the exploratory-sequential format, commencing with a qualitative investigative stage (“Stage 1”) in the form of a series of investigative interviews with a cross-section of Company personnel. The interviews explored:

- What was understood by the term “Learning Organisation” and the degree to which it was judged to be applicable to the Company (and whether this varied with participants’ vocational background).
- How Company systems (for learning and other purposes) were perceived and what drove people to either use or disregard them.

- Individual drivers to learn and whether this motivation scales up to the organisational level.
- The degree to which people perceive themselves as part of a community of common interest and practice.

The key insight that this exercise delivered was the identification of motivation as the “gap” in the expanded Kolb-esque cycle. The benefits/motivators reported driving individual learning did not appear to carry to the organisational level. Organisational learning requires greater effort and greater altruism to drive, and a system that ignores this is likely to fail.

At this point, and with a clear sense established that the expanded Kolb-esque model required some modification to explain the various dynamics observed, it was necessary to test the generalisability of these dynamics in wider and alternative contexts. The Company, after all, had been through a turbulent period and the conditions/effects were therefore not necessarily representative of other consultancies or indeed industries.

A quantitative collection exercise was therefore conducted as the second act of the mixed methods plan (“Stage 2”). This was designed to test (via questionnaire) the degree to which there is a difference between the motivation to undertake individual and organisational learning in different types of establishment. Specific industries were targeted opportunistically, including other reference points within the Company’s own industry. An online survey was used to probe three (minimum) reference companies in three markedly different industries; each reference company being required to return a minimum of ten questionnaires. The aims were to explore:

- The degree to which the discontinuity in motivation between individual and organisational learning is universal.

- The variation of the phenomenon with industry (and demographic factors).
- The degree to which the individual is motivated more by helping/developing their immediate group than their organisation as a whole.

The results of this study were enlightening in that motivation to support organisational interests was found to vary markedly with industry and vocational purpose.

1.2.6. Outcomes

The two research phases delivered a substantial combined dataset that is summarised in Chapter 4. Four related but distinct arguments are pursued through the research phases and stages and advanced as a sequence of complementary observations and insights as described in Chapters 5 to 8. These offer a novel perspective on the organisational learning process and how it differs from individual learning; how a motivation “gap” may undermine learning systems; how external and industry-specific factors may affect learning culture and the challenges to learning faced by the organisation; and why group learning may offer a catalyst for wider organisational learning. A novel model is proposed in Chapter 5 that is used to explain the other outcomes observed.

1.3. Thesis Structure

This thesis is presented in three parts; “Background” (Part 1), “Groundwork” (Part 2) and “Foreground” (Part 3). “Background” explains the first the industrial and then the academic contexts of the research; an appreciation of which is essential to understand the subsequent choices made regarding the path, focus and aims of the research. “Groundwork” justifies and describes the research activities undertaken, from the research philosophy and methodology, through application and control of methods to a summary of the datasets gathered. These datasets are then used to support four

distinct but complementary arguments in the chapters of “Foreground”, which documents the novel inductions and value of the research.

The content of each chapter is described below:

Part 1 - Background

Chapter 1: Introduction

The academic context is introduced at high level, followed by (in more detail) the industrial context for the research. The research was not closely linked to the business of the RE’s host company, but the fortunes of the wider industry in which it operates have had a significant bearing on the outcomes of the research.

The initial consultation exercise undertaken with Company stakeholders to alight on a focus for the research is described, and key themes identified which resonate through the later stages of the work. The chronological sequence of research steps is then explained, along with the developing line of investigation that links them together, each generating questions that give rise to the next.

Chapter 2: Literature Review

The central concepts and ideas in organisational learning and Learning Organisation theory are discussed and critiqued; a key point being that opinion on both and the way in which they interact varies enormously. A framework of four major divisions in theory is used to navigate the extensive literature; the “subject” of the learning (i.e. who or what learns), the learning process, the Learning Organisation concept and its relationship to organisational learning, and the value of learning to the organisation.

The first section, on the question of who or what actually can be considered the subject of organisational learning, refers the question back to the common interpretations of

“learning” in psychology and “organisation” in management theory. The conclusion is drawn that organisational learning occurs where the organisation as an entity changes its behaviour (or the collective behaviour of its members) as a result of the experiences of its members.

Next, seventeen different models for the organisational learning process are examined in order to draw out key commonalities and criticisms. The majority (a) assume organisational learning to echo individual learning processes, (b) are cyclic in nature and (c) align explicitly or implicitly with David Kolb’s experiential learning theory and cyclic model in particular.

The Learning Organisation is discussed in the next section along with the degree to which the two concepts are distinct with the conclusion being drawn that they are (or should be treated as such). The case is made for the interpretation of the Learning Organisation concept as a threshold or apex condition within the learning culture of the organisation.

Finally, the value of and business case for increasing learning capacity is considered. A sample group of case studies is used to compare aspects of theory with practice: pre-conditions and drivers for learning interventions, expected benefits and intervention design, cost and duration. Although clear benefits, costs and risks are difficult to pin down, it appears that the concept remains an alluring goal.

The chapter is concluded with an assessment of the research opportunities arising from the current state of theory.

Part 2 – Groundwork

Chapter 3: Methodology

This chapter begins by establishing the ontological and epistemological paradigms

appropriate to the research aims and context for application. Possible research designs and data collection methods are discussed and critiqued, and cases presented to support those subsequently selected.

The research exercise is divided into Phases 1 and 2, the former being the originally planned study and the latter being undertaken to explore the unexpected outcomes of Phase 1. The initial Phase 1 is an action research study carried out over the course of three six-monthly cycles. The action research (it is argued) suits both the objectives of the research and also the context; a key aim of the EngD programme being to deliver benefit to the host company.

The results drawn from Phase 1 were coloured by the effects of the sustained downturn in the industry in which the host company operates but were nevertheless informative. A key thread which emerged was that motivations driving the individual and organisational learning processes may be very different both in nature and intensity. Phase 2 was therefore conceived to investigate this effect further, both within the host company, the wider industry, and other unrelated industries. A mixed methods, explanatory-sequential format is chosen as appropriate to such a scenario and research objectives.

Chapter 4: Method

This chapter documents the detailed design of the research methods applied and explains how the principles and controls intrinsic to each were implemented in practice. It then summarises the different datasets collected in the various phases and stages of research. Since not all of the data are used directly in the development of theory, an overview is provided from which particular aspects are then invoked as appropriate in Chapters 5 to 9.

Part 3 – Foreground

Chapter 5: The “Lemniscate” Learning Model (Outcome 1)

This chapter reviews and compares evidence from the two research phases with the key findings of the literature reviewed in Chapter 2 to conclude that there are significant gaps between organisational learning theory and practice. A “lemniscate” (on account of its shape, and so termed to distinguish it from the many other models presented in Chapter 2) model is proposed for organisational learning that is central to the original contribution to theory of this research. It is presented as a logical successor to the state-of-the-research described in Chapter 2, answering the criticisms directed at current models and adding/amending features to serve as a better fit representation of organisational learning actuality.

Chapter 6: The Learning Gap (Outcome 2)

This chapter examines the role of motivation in the perpetuation of organisational learning. Unlike individual learning, which is active on both an involuntary as well as voluntary level, committed effort is required to drive each step of the organisational learning process. However, the two stages of the mixed methods study instead found that inclination to support collective interests was consistently lower than to support the furthering of individual interests. This was found to be the case across a sample of organisations across three different industries, although the magnitude of the effect varied between industries. This variation, an unexpected outcome, suggests that creating/enhancing organisational learning may be a very different challenge for some industries.

It is further argued that making participation in a system mandatory, learning or otherwise, cannot replace genuine motivation.

Chapter 7: Cultural Divide (Outcome 3)

This chapter develops one of the conclusions of the literature survey, specifically that the ideal of the Learning Organisation is best understood as a standard of learning culture within an organisation. Learning culture is then shown to be a product of the external environment and industrial context as well as of factors internal to the organisation.

The deleterious effect of the downturn in the oil and gas industry on the learning culture within OGCom is offered as a demonstration of this relationship. The apparent differences in learning culture and characteristics between the industries surveyed in Stage 2 of the mixed methods study provide further substantiation. These effects are linked back to the “lemniscate” learning model described in Chapter 5. Finally, parallels are drawn with, and lessons drawn from, the pursuit of safety culture (as a comparable aim, and one central to OGCom’s parent industry).

Chapter 8: The Dynamic Group (Outcome 4)

The elusive but widely acknowledged contribution of group learning is considered at length in this chapter. Throughout all stages of the research the impression was built that members of an organisation identify far more closely with some sort of sub-group (whether based on work or social factors) than with the wider organisation as a whole. The interest of the group unit is found to be a greater source of motivation than that of the organisation across all industries surveyed for Stage 2 of the mixed methods research exercise.

The importance of group learning is often acknowledged in the literature but here the group is identified as an entity which is capable of learning in a way that approximates individual learning far more closely. It is proposed that group learning can be

harnessed to deliver greater organisational learning but only if a workable level of autonomy can be achieved.

Chapter 9: Conclusions

This chapter summarises the work done and the key lessons arising from the research. The conclusions drawn from each of Chapters 5 to 8 are revisited and associated implications for practice considered. Potential “blockages” to the effective operation of the “lemniscate” learning model are identified and solutions proposed. The practical value of the research is demonstrated with a particular focus on the degree to which it can be justifiably generalised.

The contributions made by the project to the overall body of knowledge and to the Company are highlighted, and possible avenues arising for future development and research discussed.

Finally, personal reflections from the process are offered in conclusion.

2. Literature Review

The literature on the themes of organisational learning and the Learning Organisation is labyrinthine and interwoven with similar but subtly conflicting ideas. Moreover, the central terms are fluid in definition making it yet more difficult to be clear where authors are entirely in agreement or otherwise. This review navigates through the maze by exploring four themes that serve as effective fault lines in the literary landscape. First, the term “organisational learning” is considered in relation to the learning subject (i.e. the entity that learns) to establish a definition to be used herein. Next the learning process is examined, and parallels with David Kolb’s experiential learning theory established. The Learning Organisation and its relationship with organisational learning are discussed next, with the conclusion drawn that the two concepts are related in the same manner as are culture and practice. Finally, the value of organisational learning is scrutinised; something that is often assumed unquestioningly and yet for which it is difficult to construct a robust business case.

Despite the popularity of organisational learning (and the development of the Learning Organisation⁵) as a theme in management research, there is currently no central theory of organisational learning (Bartsch *et al.*, 2013) or a consensus on what precisely it entails. Easterby-Smith categorises the subject as “...a multi-disciplinary field containing complementary contributions and research agendas” (Easterby-Smith, 1997). That the concept is expansive is well documented (Wang and Ahmed, 2003); Dibella and Nevis, for example, described the body of literature on the subject as “burgeoning” as long as twenty years ago (1998). As Matlay (2000) notes however,

⁵ In contrast to a substantial proportion of the work referenced herein, Learning Organisation theory is considered separately from Organisational Learning theory in this chapter; justification for which is provided in Section 2.3

the working definitions used tend to be overlapping and complementary rather than conflicting. For example, organisational learning is:

“... a process in which members of an organisation detect errors or anomalies and correct it by restructuring organisational theory of action, embedding the results of their inquiry in organisational maps and images.” (Argyris and Schön, 1978)

Or a process in which:

“...organizations are seen as learning by encoding inferences from history into routines that guide behaviour.” (Levitt and March, 1988)

Or one which:

“...increases an organisation’s capacity to take effective action.” (Kim, 1993)

This makes the literature as a whole very challenging to navigate. To maintain orientation in the maze, a route must be plotted in advance in the form of a clear and coherent set of themes for consideration.

Miner and Mezias (1996) provide a useful framework by identifying three key clarifications required for understanding the wide body of organisational learning research:

1. Who or what is doing the learning (*the “learning subject”*)?
2. What are the key learning processes/*how does the learning happen?*
3. When is the learning valuable?⁶

Modifications to the original list from Lähteenmäki *et al.* (2001) are paraphrased in the italics and a further illuminating question is added:

4. What are the elements of a learning organisation?

This framework is utilised herein and the questions are considered in turn in the

⁶ Section 2.4, which addresses this question, considers also why learning is considered valuable.

sections that follow.

2.1. The Learning Subject

In this section, different perspectives on the “learning subject” from the literature on organisational learning are assessed, before it is concluded that the question is best addressed by considering the component concepts individually: what is learning, and what is an organisation? The argument is advanced that organisational learning occurs where an organisation changes its collective behaviour as the result of a change of experience. As a phenomenon it should be differentiated from “group” learning because the challenges are different on a larger scale.

Miner and Mezias (1996), in answer to their own first question, identify four levels of learning subject and consider all to be relevant to organisational learning. The levels are “Individuals” (i.e. within the organisation), “Groups” within the organisation, whole “Organisations” and “Populations of Organisations”. This lattermost category refers to communities of organisations, the interaction of which is also referred to as extra-organisational learning (Prats Lopez *et al.*, 2015) or inter-organisational learning (Beeby and Booth, 2000); it is dismissed herein as a separate concept⁷. Whilst evidence is provided to support the idea that each of these types of entity is capable of learning, Miner and Mezias (1996) do not claim that all must be invoked for organisational learning to occur but instead call for each to be distinguished to “prevent false conflicts”.

It is often noted by researchers that organisational learning is “...*not simply a sum of the learning acquired by each of its members*” (Lähteenmäki *et al.*, 2001); it is also broadly acknowledged that the central “unit” in the phenomenon remains the individual

⁷ Although it should be noted that the influence of factors outside the organisation and specifically to do with its industrial context is a key point of discussion in Chapter 7.

(or perhaps more accurately: individuals) (e.g. Senge, 1990). Neither of these valid points gets to the root of the issue however, which is whether organisational learning should properly refer to all learning activities undertaken by all entities within an organisational context, or whether the term should be limited to a subset of activities and/or entities (which leads back to the question of how the term is or should be defined).

Dibella and Nevis (1998), for example, subscribe to the former view; organisational learning, they assert, “...*may occur at any one of several levels... ...or as part of an organizational change process.*” Watkins and Marsick (1993) are more specific and identify learning on individual, group and organisational levels as equally requisite. Dixon (1999) identifies the need for organisational learning to be “*actively facilitated*” by relevant parts of the organisation and calls for integration and involvement across all levels to derive maximum benefit. Crossan *et al.* (1999) take the approach that individual, group and organisation can learn, and it is the key step of institutionalisation that graduates what otherwise would have been individual or group learning into organisational learning. For Yeo (2005), organisational learning encompasses growth at all three levels but there is a progression in maturity between the levels in that learning initially begins at individual level but can expand to group or organisational level if conditions are suitable.

For some, organisational learning is grounded in the learning capacities and processes of the individuals of whom the organisation consists and can therefore only be a product or facet of individual learning (Wang and Ahmed, 2003). For Mitki and Herstein (2011), organisational learning as a process resides only in the collaboration of individuals. Argyris and Schon (1978) acknowledge the importance of disseminating learnt material to the collective in order for learning to occur on an organisational level

but stop short of recognising the organisation as a learning entity. Örtenblad (2001) similarly recognises the key agents as individuals or groups of individuals. Senge's (1990) focus is at the individual level, although he champions team level learning as a requisite for Learning Organisation actualisation.

Conversely, there are those for whom there is an entity of some sort called an organisation that is capable of learning because the effects of that learning can be observed and likened to individual learning outcomes. Cummings and Worley (1997) opine that individuals may learn without the organisation also doing so, and vice versa. Engeström (1987, 2010) proposes "*expansive learning*", whereby a community learns as an entity by constructing "...a new object and concept for their collective activity". Hedberg (1981) personifies the organisation to the degree that it can "...increase their understanding of reality by observing the results of their acts" and "...learn by imitating other organizations' behavior, or by accepting others' experiences...". For Boateng (2011) organisations can learn as individuals do, the distinction between the two types being drawn only on the ownership (private or shared) of the meaning structures used in the interpretation of experience.

The view that the organisation is capable of literal learning is most often rejected on the grounds that as an entity it does not have the same cognitive faculties as the individual (e.g. Reeves, 1996). This viewpoint is the mother of a literary debate on the subject of "organisational memory"; between those for whom it can only be metaphorical (e.g. Argyris and Schön, 1978), and those for whom it is a tangible faculty (e.g. Huber, 1999; and topically, in relation to project-based organisations, Koskinen, 2010). The question is whether physical documents and data records be considered units of memory of equivalence to (for example) Atkinson-Shiffrin's multi-store model of memory permanence (1968). Further parallels discussed are "organisational

forgetting” (e.g. Hedberg, 1981; more recently, Tsang, 2017) and learning that produces outcomes detrimental to the entity (e.g. Levitt and March, 1988).

Whether the absence of a particular cognitive function or capacity determines the capacity of a collective entity to learn depends on what is understood by the term “learning”. Whether the term can then be applied to a particular entity depends on how that entity is defined. For this reason, the sections that follow consider first the nature of individual learning and associated theories, and then the nature of the organisation as a concept.

2.1.1. The Nature of Learning

Learning appears as a key theme in myriad fields of study including psychology, neuroscience and computer science and definitions applied can vary both between fields and within fields (Barron *et al.*, 2015). It is in the field of psychology where learning finds its greatest prominence however, and there are numerous schools of thought regarding learning mechanisms.

Key bodies of psychological learning theory can be divided into four main traditional paradigms: Behaviourism, Cognitivism, Constructivism and Humanism. These are introduced briefly below, along with an indication of how each typically influences educational practice.

Behaviourism

Behaviourists hold that the precise micro-biological and/or neuroscientific mechanisms that create learning cannot be known; only the product of the change (i.e. behaviour) is measurable and therefore important. Key concepts within behaviourism are classical conditioning, whereby a reflex responds increasingly automatically to a given stimulus; and operant conditioning, whereby a desired response is reinforced using a basic

feedback mechanism of reward or punishment.

While the most famous studies on this topic relate to conditioning in animals and it is generally accepted that human mechanisms are capable of a greater level of sophistication, it is nevertheless the case that repetition is effective in humans also. In practice, behaviourists generally consider the learning process to depend on an authoritative teacher figure or “More Knowledgeable Other” (MKO) who determines what should be learnt and when. The MKO provides basic feedback in the form of scoring and/or praise and criticism, and the learner is left to adjust their behaviour accordingly.

The concept of the MKO is also central to “academic” learning theory; as discussed in Section 2.1.2.

Cognitivism

Unlike behaviourists, cognitivists are interested in the working of the brain itself and attempt to infer its processes. Learners are thought to actively process information and create practical associations with existing knowledge for later use. Learning is “self-directed” and will be optimised where learners have a hand in determining their own objectives and strategies.

The role of the MKO for the cognitivist is therefore to manage the problem-solving process and provide opportunities for learners to make new connections in accordance with agreed objectives. The MKO observes the progress of the learner and steps in to provide assistance as and when required; functioning more as a tutor than a teacher. Strategies are applied to assist the learner in the structuring and effective storage of information.

Constructivism

The distinction between constructivism and cognitivism is subtle, and some hold the former to be a sub-field of the latter. The two fields are both concerned with the how information is processed by the learner; for the constructivist, the key focus is on the perception of the individual, which “constructs” the subjective reality that they experience. As with cognitivism, the MKO encourages active participation of the learner in the learning plan and works with the learner to set objectives. Greater focus is placed on the role of the learner in the analysis and interpretation of information received.

Humanism

Humanism is a philosophical stance that champions the value and agency of human beings both as individuals and collectively. The humanist gives greater autonomy still to the learner, giving responsibility to the learner for choices made to allow greatest impact of outcomes. The MKO in this context is a facilitator, whose role is to provide a non-threatening and forgiving environment for experimentation, and to motivate learners to develop their own plans and strategies.

For completeness a number of other prominent and more recent theories should also be acknowledged:

- Information processing; a sub-field of cognitivism which focuses on the flow and processing of information within the cognitive system.
- Situated learning; which considers the contextualisation of knowledge and process of learning in the everyday setting.
- Social learning; which concerns learning through observation of the behaviour of others around the learner.

- Sociocultural theory; in which learning is a social process occurring on two levels: interaction with others, and via internalisation into the learner's mental structure.
- Interpersonal neurobiology; which holds that brain growth and learning continue throughout the lifespan and are influenced by personal relationships⁸.

Whilst there is a clear evolutionary progression in the prevalent ideologies on individual learning, it is interesting to note that the modern theories do not negate those that precede. The humanist perspective, for example, is not that classical conditioning does not deliver learning; it just argues that there are more effective mechanisms on which to focus. This suggests that there are many possible "paths" within human cognition that result in some kind of learning being achieved. It is perhaps for this reason that the commonly accepted definitions of the term recognise the outcome rather than the neurological or physiological process (Skinner, 1950).

A common working definition that is accepted by the majority of textbooks (De Houwer *et al.*, 2013) gives learning as "*a relatively permanent change in behaviour due to experience*" (Raygor, 2005). Barron *et al.* (2015) propose the following definition as more sympathetic to a range of disciplines: "*a structured updating of system properties based on the processing of new information.*" Huber (1991) adds the qualifier that "*an entity learns if... ..the range of its potential behaviours is changed*"; this acknowledges a scenario in which the individual displays the same behaviour as before the learning stimulus but having selected from a greater range of options.

Essentially then, the key elements necessary for learning to be evidenced are:

- A change⁹ in behaviour (or range of potential behavioural responses)

⁸ This transdisciplinary approach is considered highly compatible with systems thinking theory.

⁹ It is notable that at this stage there is no concept of learning agency, or distinction between change that is self-directed or simply emergent.

- Relative permanence of that change
- Resulting from experience/an experience

Relative permanence differentiates learning from other activities which affect behaviour in an immediate or short-term manner. Although it should be noted that the interpretation of “experience” here is open-ended, in this context it may cover a range of influences whether it is a repeated stimulus, a syllabus delivered or an observation on which reflection occurs. The type of input that catalyses learning provides another key distinction in learning theory; between “academic” and “experiential” learning.

2.1.2. Academic and Experiential Learning

The substantial body of research on individual learning styles is aligned around two parallel traditions (Stavenga de Jong *et al.*, 2006). The first focuses on “academic” learning and examines the interaction between students (qua students) and their institution-based learning environment. This was instigated by research into different stereotypical learning tendencies exhibited by students undertaken by Gordon Pask (1976), and later became known as the “Student’s Approach to Learning” (SAL) tradition (Richardson, 2000).

The second tradition was initiated by David Kolb who, with Roger Fry (1975), proposed a cyclical “experiential” learning model and then used this as a basis from which to define learning “style” via a “Learning Style Inventory” (LSI) (Kolb, 1976). Kolb’s cycle postulated that the experiential, i.e. derived from direct interaction with the world encountered, learning process comprises the following stages (starting from any, but in sequence):

- Concrete experience
- Reflective observation

- Abstract conceptualisation
- Active experimentation

Kolb's ELT has been criticized from a wide range of academic viewpoints (Beard, 2008) and improvements have been proposed to better describe the internal learning process (e.g. Wilson and Beard, 2003). Nevertheless, it remains a prominent influence on organisational learning theory (as detailed in Section 2.2).

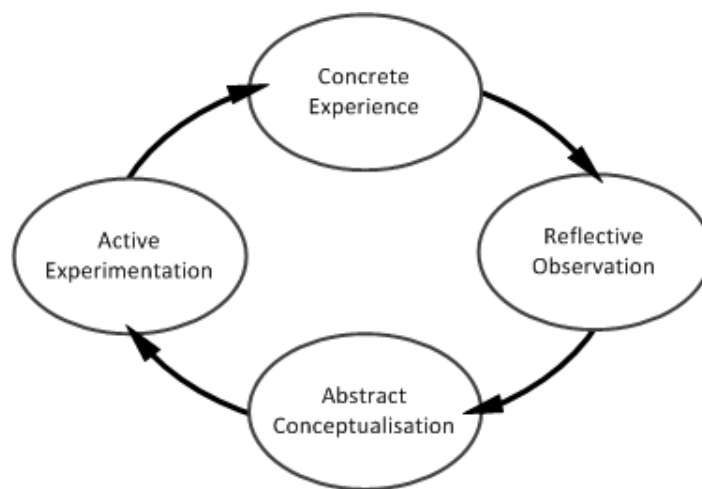


Figure 2.1 Kolb and Fry's Experiential Learning Cycle (1976)

The typical differences between the two traditions as they relate to a number of different aspects of learning are summarised in Table 2.1. Academic learning, commonly undertaken in a dedicated educational context, is also referred to as “top-down” learning. Experiential learning (“bottom-up”) by contrast is a more constant, non-deliberate process that takes place without formal instruction from an MKO.

Table 2.1 Comparison of elements of academic and experiential learning¹⁰

Aspect	Academic	Experiential
Teacher/MKO	Yes	No
Purpose	Learning	Doing
Curriculum	Fixed, defined	Open-ended
Setting	Institution (typically)	Anywhere
Responsibility for learning	Teacher (traditionally)	Student

The distinction between the two traditions of learning research is important because it helps to contextualise the differing approaches advocated by the different schools of theory on learning itself. Studies such as Stavenga de Jong *et al.* (2006) have concluded that there are differences between learning styles/modes/dimensions of students in the classroom and in vocational training situations, and that an aptitude for one does not correlate to an aptitude for the other. In the context of organisational learning it is significant because it is helpful to recognise that the vast majority of the associated theory aligns very clearly with the experiential discipline.

To expand on this point, experiential or “bottom-up” organisational learning would logically refer to the process of collective behavioural change as the result of observations made during interactions with the industrial context. “Top-down” organisational learning would invoke a scenario in which the organisation was taught a specific skill by an MKO (presumably an external consultancy) brought in to facilitate the desired learning. The latter situation is common for the individual, but rarer for the organisation as an entity. The focus herein is on the former; the organisation deriving learning and value in the course of conducting its normal activities.

The characteristics of the organisation are now examined to determine whether it can

¹⁰ A similar comparison is drawn by Lave and Wenger (1991) to distinguish between the “Old Model (cognitive)” and the “New Model (constructivism, situativism)”

be considered capable of learning as defined in this section.

2.1.3. The Nature of the Organisation

One definition of the organisation that is popular in Organisational Behaviour theory is provided by Buchanan and Huczynski (2013):

“An organization is a social arrangement for achieving controlled performance in pursuit of collective goals.”

The limitation of this definition is that its central term, “arrangement”, is as elusive as the word that it aims to clarify. This is a common issue however, as other definitions generally also rely on similar synonyms; group, association, collective. This invites the question of whether there is a structural element that differentiates an organisation from a loose collection of people. Prominent management theorist Henry Mintzberg identifies five different types of organisational structure; defined by the interrelationship and apportionment of control of the organisational components therein (Lunenburg, 2012). These are:

- Simple structure
- Machine bureaucracy
- Professional bureaucracy
- Divisionalised form
- Adhocracy

Mintzberg (1980) asserts that all organisations feature, in some way, five elements: the “strategic apex” (A; Figure 2.2), the “technostructure” (B), the “middle line” (C), the “support staff” (D) and the “operating core” (E). Each of Mintzberg’s structures relates to a different dominant component from Figure 2.2; e.g. the “simple structure” is dominated by its strategic apex, whereas for a “machine bureaucracy”, the

technostructure is the key influence.

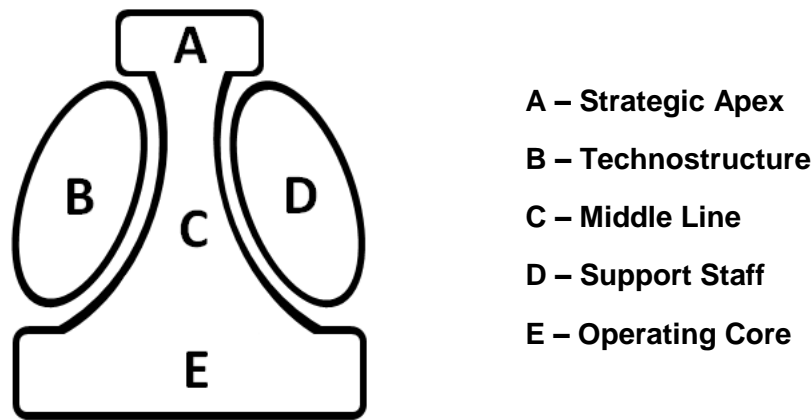


Figure 2.2 Mintzberg's Five Basic Parts of the Organisation (1980)

On inspection, Mintzberg's framework may be a good fit for commercial organisations of a certain size but it is harder to apply to smaller, social or recreational associations (to list but several).

An alternative classification of organisations by design is provided by Miles *et al.* (2010) and reproduced (in an abridged form) in Table 2.2.

Table 2.2 Traditional Organisational Designs (Miles *et al.*, 2010)

Organisational Design	Coordination and Control Mechanism
U-Form	Lower-level units coordinated and controlled by higher level units
M-Form	Division level oversees functions
Matrix	Dual hierarchy (products and functions)
Multi-firm Network	Hierarchy of the lead firm over the total network and hierarchy within network member firms

One of the main features of these systems for classification of organisations is that they focus heavily on the control aspect (i.e. how the organisation is administered/ administers itself). A crucial aspect of people acting as an organisation (as opposed to being at leisure, say) is that their day-to-day actions are changed from their norm

because of their association with the organisation. This control aspect gives rise to a wide range of metaphors that have been used over the years to describe the operation and dynamics of organisations, and to establish theoretical viewpoints for research on same (Green, 1996). These include the organisation likened to a machine, an organism, a brain, a culture, a psychic prison and an instrument of domination.

Such metaphors have their uses in explaining the form and function of the organisation, but the majority stop short of expressing the complexity created by the multitude of internal and external interfaces, the non-uniformity of members and their interests, and the non-linearity of their interrelationships. Pondy and Mitroff (1979) point out that organisations are “multi-cephalous”, and as such are of “Level 8” (of nine) on the scale of system complexity proposed by Boulding (1956). (Typical research efforts however (they argue), rise no higher than Level 3 on Boulding’s scale.) Level 8 complexity is surpassed only by systems of which Boulding could not at that time conceive.

Daft and Weick (1984) embrace the identification of the organisation as a complex system, and propose four assumptions as core to the study of organisations:

- Organisations are open, social systems that interact with their environment;
- Organisations are capable of possessing knowledge;
- Interpretation as part of the learning process is conducted at management level;
- Organisations will differ in their interpretational conclusions.

The latter three points, as previously demonstrated, divide opinion. The first, however, highlights another aspect common to different types of organisation; that they are social, and interactive (both internally and externally). Membership of an organisation influences and changes behaviour by consensus as well as, or perhaps rather than, by control. The “open” condition of the system reinforces this point; people join voluntarily because they see some benefit in membership.

The following is proposed as a list of universal organisational elements/features drawn from and supporting the definitions discussed:

- Organisations are made up of people (i.e. they are conscious and purposeful in a way that a colony of ants, say, is not).
- Members are multiple, although how many is unclear.
- Those people behave/interact differently because of their membership.
- Membership is of some benefit to the member.
- The organisation has a purpose or identity that transcends its membership.

Returning to the question of whether the organisation as an entity is capable of learning (i.e. changing its behaviour relatively permanently as a result of its experience), it is concluded that this voluntary collective can indeed learn. This statement must be qualified by noting that the entity's behaviour is the common behaviour of the collective, and therefore only universal or at least widespread change demonstrates learning at an organisational level. This learning is experiential since it springs from the cumulative experience of the interaction of the membership with its environment rather than with an MKO in a deliberately educational context. The experience that generates learning may therefore be collective or several.

One aspect that remains unclear is quantity; how large a membership is required in order for an organisation to be identified? All that can be deduced from the general terms used in the literature is that it requires a plurality, but surely the term would not be applied to a group of two or three? The approximate answer comes from Boulding (1956) in that an organisation *propre* implies a number of members sufficient to be described as a highly complex system. Although this is still very vague, it is proposed that this complexity is found in systems where, as a minimum, members are too numerous or distributed for each to know all of the others personally or to interact with

them directly.

For completeness it is also worth noting that in addition, the organisation has some means of achieving learning for which the individual has no equivalent, including (Mills and Friesen, 1992):

- Learning by procurement (i.e. buying information, software etc.)
- Learning by recruitment (i.e. bringing in new members with different skills)
- Learning by acquisition (i.e. buying complementary businesses)

This is not to say that all procurement, recruitment or acquisitive changes result in organisational learning; any such change must still meet the criterion of changing collective behaviour.

2.1.4. Summary and Conclusions

Whilst opinion is divided as to which entity or entities learn as the result of organisational learning, the interpretation applied herein is that the collective is capable of learning. This is justified on the grounds that the definition of learning as generally applied to the individual refers to a (relatively permanent) change in behaviour resulting from experience is equally applicable to the collective case. Moreover, there is no clear reason to suppose that individual learning should be or is in any way different as a result of taking place in an organisational context so to interpret organisational learning as something that happens at the individual level is effectively redundant.

The issue of whether the organisation is an entity capable of possessing skills or tacit knowledge is to some degree immaterial, since this facet does not feature in the definition of learning. This focus on outcome rather than faculty or process tallies well with Dibella and Nevis' (1998) proposed list of essential criteria which must be met for the conclusion to be drawn that organisational learning has taken place:

1. “New skills, attitudes, values, and behaviours are created or acquired over time”;
2. “...what is learned becomes the property of some collective unit”;
3. “...what is learned remains within the organization or group even if individuals leave”.

As Kim (1993) points out, an organisational learning model that fails to distinguish clearly between the contribution of the individual member and the role of the organisation will either “...obscure the actual learning process by ignoring the role of the individual...” or “...become a simplistic extension of individual learning by glossing over organisational complexities”. Whilst the learning entity is the organisation, the actions that drive the cycle (as discussed in Section 2.2) are taken by the individual members acting alone or in concert. The third, more elusive, actor in this arena is the group. That it plays a role is acknowledged but the nature of that role is indistinct. Moreover, it is unclear whether the group condition approximates that of the individual or whether it acts as a miniature organisation, or as an idiosyncratic entity in its own right.

2.2. Learning Process/Models

This section examines how organisational learning is considered to take place. Numerous models both long-standing and recent exist; these are critically reviewed with the aim of identifying key commonalities and key areas of inaccuracy. It is observed that the majority of models are closed and cyclic in design, generally mirroring the models used to describe learning in individuals. One particular individual learning model appears to underlie many of the organisational models reviewed; Kolb and Fry's experiential learning cycle. This is significant because it re-confirms the (typically) experiential nature of organisational learning, and because it provides a baseline assumption about the learning process that is challenged in this research.

Organisational learning “models” are abundant within the relevant literature. Many of these describe not the process of organisational learning, however, but a system for its categorisation, or an itemisation of applicable mechanisms. For example, Miner and Mezias (1996) consider types of learning in evidence behavioural (by which they mean deductive), inferential (or experimentation), vicarious (or emulation of other organisations) and generative. This final category is acknowledged as elusive both in theory and practice and is aligned approximately with Argyris and Schön's (1978) “double-loop learning” concept¹¹. This is of interest of course, and implications are considered in Section 2.4.3, but the focus of this theme is on models describing the theorised process of organisational learning; how does it happen?

The great variety of stances taken within organisational learning literature and research, and the sheer volume of work produced, make summarising views on the learning process (in particular) a nebulous task. It will be divided herein, for the

¹¹ After Bateson (1972).

convenience of the RE and the reader, into two branches: resonant models (i.e. those fairly long established and often acknowledged by reference) and recent models. The former category demonstrates the most enduring and tested theoretical themes, and the latter shows the directions in which theory is currently developing.

2.2.1. Resonant Models

In a recent review, Göhlich (2016) evaluates prevalent themes/authors by comparing citations recorded on a number of online libraries and data bases. He concludes that Senge and Argyris and Schön have been discussed most widely, followed by Lave and Wenger, Weick and Nonaka and Takeuchi. March and Olsen are found popular in what Göhlich dubs “non-scientific contexts” but largely ignored in “scientific” ones, and the inverse appears to be true of Engeström. Whilst this provides a useful and valid starting point, it is perhaps too fine-meshed a filter to capture all ideas of current interest. It also disproportionately favours those works published earliest, may lose track of ideas evolved sequentially by different authors, and ignores regard given by one author to another.

The list is expanded herein, therefore, to include other influential authors. Whilst the focus is on finding those with a coherent answer to the question of how organisational learning works, those whose models fulfil a different objective are retained in order to provide greater clarity on (a) the range of approaches taken and (b) the reasons why some are disregarded by this research.

Models presented are arranged into the following broad categories:

- Simple cyclic models
- Complex cyclic models
- Matrix/structural models

Simple cyclic models:

March and Olsen's (1975) model (Göhlich's "non-scientific" reference) attempts to correct the failure of pre-existing models to incorporate the cognitive and evaluative limitations imposed by the human experiential learning process. They acknowledge (a) the degree to which experience (i.e. observations) requires interpretation, (b) that causality may be indeterminable or wrongly surmised, and (c) that the goals of the organisation in general and the learning exercise in particular may be ambiguous or conflicting. The organisational learning cycle is therefore not a perfect process, but one subject to the vagaries of human sense-making.

The cycle begins¹² with a perceived "discrepancy" between a member's or members' expectation of the world and the reality encountered. This leads to individual behaviour of some sort which in turn generates/contributes to collective behaviour. This elicits a "response" from the wider world, allowing assessment of the efficacy of the actions and the condition of the world in general.

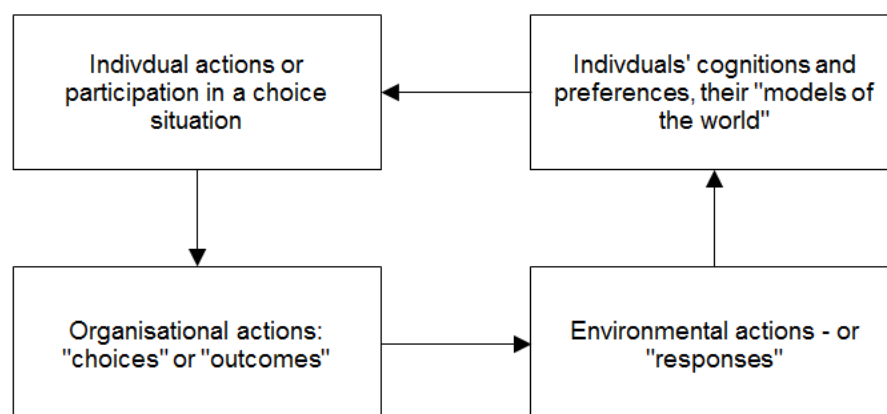


Figure 2.3 The Complete Cycle of Choice by March and Olsen (1975)

Kim (1993) challenges the dependency of this model on external influence, noting that

¹² Though this process is shown as cyclic, there is a chronology inherent in that a "response" must have a precedent action.

it does not allow for the possibility of learning taking place within the boundaries of the organisation. Certainly, the model is simplistic but it makes a laudable attempt to map the interaction of individual processes and organisational ones. It does not indicate any kind of filtration process between the actions of the individual and those of the organisation; it also describes a very reactive sequence in which each action prompts another without any suggestion of a continuity of practice.

An alternative model more reflective of ongoing organisational process is provided by Chris Argyris and Donald Schön, whose concept of double-loop learning resonates so consistently throughout the organisational learning literature that it constitutes an island of rare common ground. Argyris and Schön (1978) draw a distinction between a basic feedback loop that results in a mechanistic correction of operational process ("single-loop" learning) and a more profound change occurring as the result of the same feedback being used to challenge and revise the assumptions, norms or governing principles that underlie the operation ("double-loop")¹³. Double-loop learning is championed as a path to real and transformational change within an organisation, and "*...essential to the creation of desirable social worlds*" (Greenwood, 1998).

¹³ It should be noted that the distinction between single and double-loop learning originates with Bateson (1972); as discussed at greater length in Section 2.4.3.

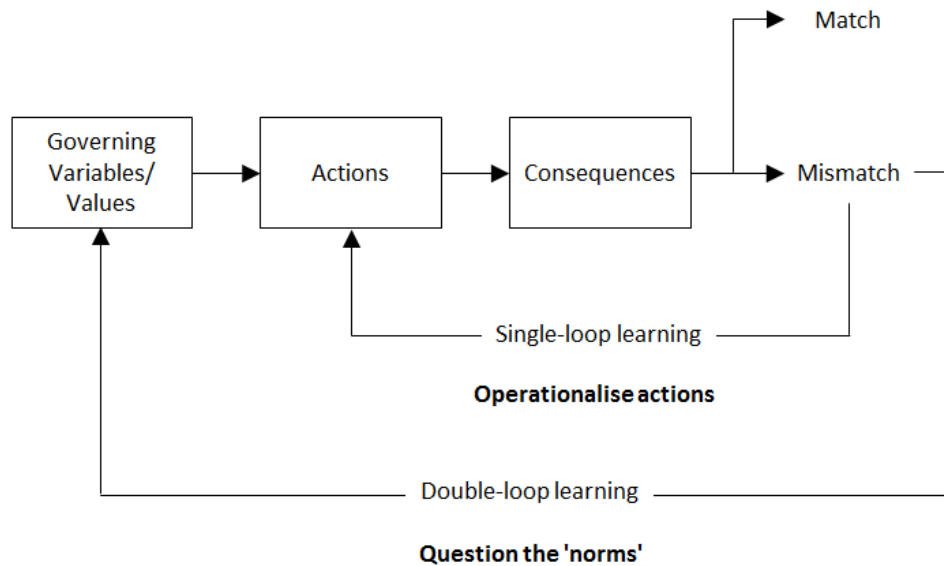


Figure 2.4 The Theory of Action Model by Argyris and Schön (1978)

Greenwood (1993, 1998) finds inconsistencies between the double-loop learning theory and practice of and recommended by Argyris and Schön, resulting in “...*dubious strategies for the promotion of enlightened professional artistry*” (Greenwood, 1993). Nevertheless, the concept is both popular and persistent, and has spawned a sub-discipline of theory concerning the loops and levels of organisational learning; as discussed at length in Section 2.4.3.

One of the simplest models proposed for the organisational learning process comes from Dibella, Nevis and Gould. Dibella *et al* (1996) build on the work of Huber¹⁴ (1991) to develop the learning model illustrated in Figure 2.5. According to this model, organisational learning occurs where new information (learning material) is absorbed by an organisation; the information is distributed within the organisation; and that information is used in some way, presumably in the pursuit of the interests of the organisation. Organisational learning does not occur if one person only learns; nor has

¹⁴ Huber in fact identifies four “Constructs and Processes”: Knowledge Acquisition, Information Distribution, Information Interpretation and Organizational Memory.

it been achieved if many people learn different skills. The information acquired must be disseminated (so that it affects the behaviour of the whole organisation) and utilised (as behavioural change).

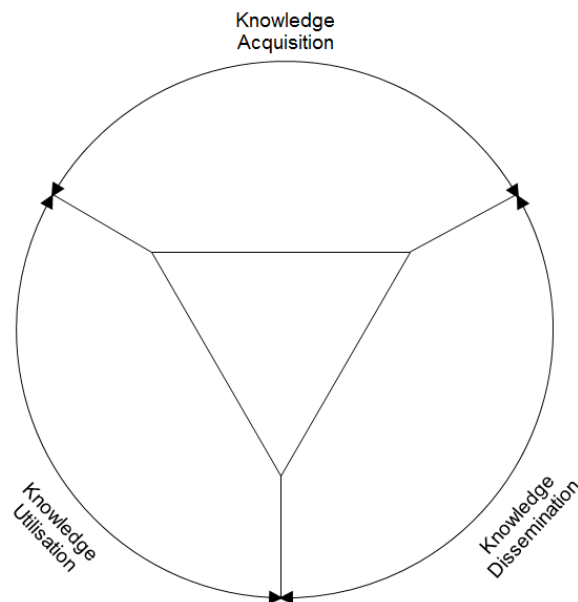


Figure 2.5 The Organizational Learning Cycle by Dibella *et al.* (1996)

The Dibella *et al.* cycle is intuitive but it fails to explain how useful information is either targeted for acquisition or filtered from information available and made useful to the organisation. Dibella and Nevis (1998) later explain “how” organisational learning takes place with reference to seven learning “orientations”. The “how” in this context refers not to the way the process works but the type of learning that occurs (i.e. knowledge source is internal or external, formal or informal etc.). Moreover, both Huber and Dibella *et al.* apply an interpretation of learning which is somewhat narrow by modern standards, limited as it is to exchange of knowledge as a currency; for Huber (1991), different types of learning (congenital, experiential, vicarious etc.) are subcategories of knowledge acquisition rather than *vice versa*.

Dixon (1999) considers the organisational learning process to operate via the collective capability of its members to create new meaning experientially, and then compare and

consequently revise their stored meaning structures appropriately. At the organisational level, the distinction must be drawn between private (or individual), accessible (i.e. publicly discussed and challenged) and collective (or shared/stored) meaning structures. Set within the accessible structures field is a cycle of four steps which must be facilitated by the organisation in order to actualise organisational learning (Figure 2.6).

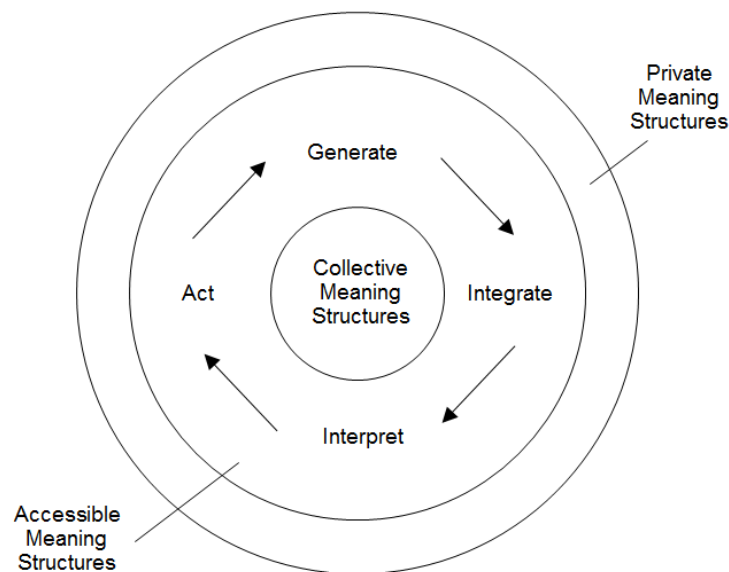


Figure 2.6 The Organizational Learning Cycle by Dixon (1999)

The steps in Dixon's cycle explicitly echo the (individual) experiential learning cycle developed by Kolb (1984)¹⁵ and the author goes so far as to show the two superimposed to highlight the similarities. This diagram is reproduced in Figure 2.7 (overleaf). This comparison between individual learning theory (and specifically Kolb's ELT) and organisational learning theory is significant to this research; it is discussed at greater length in Section 2.2.3.

¹⁵ See Section 2.1.2.

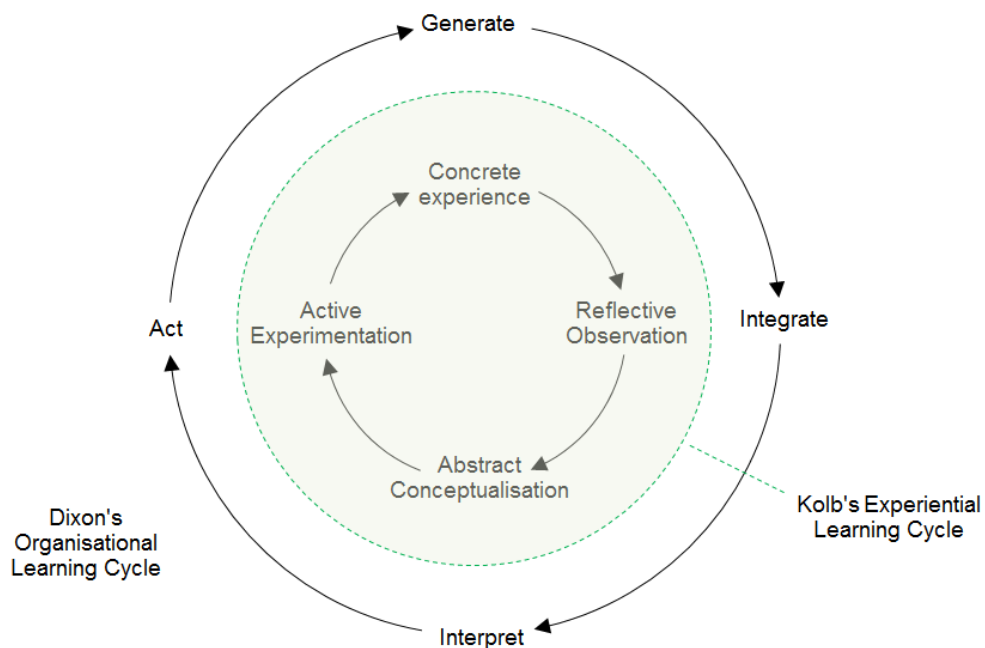


Figure 2.7 The Organizational Learning Cycle by Dixon (1999) and the Experiential Learning Cycle by Kolb (1984)

Also drawing from psychology and learning theory is the work of Yrjö Engeström. In 1987, Engeström published his theories on “Learning by Expansion”, the essence of which is that, unlike acquisitive or participatory processes, learners bring something new into existence; a “...*new object and concept for their collective activity*” (Engeström and Sannino, 2010). Engeström’s (1987) theories are based on the work of the psychologist Lev Vygotsky, the founder of both the unfinished theory of cultural-historical psychology and of the sociocultural theory of learning tradition, and in particular Scribner’s (1985) analysis of same.

The “expansive learning cycle” Engeström (1987) proposes begins with the individual member questioning the accepted practice in the abstract. This initial abstraction is transformed into a (concrete) new form or forms of collective practice. Simultaneously (asserts Engeström), “...*the cycle produces new theoretical concepts – theoretically grasped practice – concrete in systemic richness and multiplicity of manifestations.*” Engeström envisages the organisation as a potential learning community engaged in

cultural transformation, creation of synergies and development of novel theoretical concepts. As a general comment, such a vision sits more easily alongside Learning Organisation theory than with the other models presented in this section.

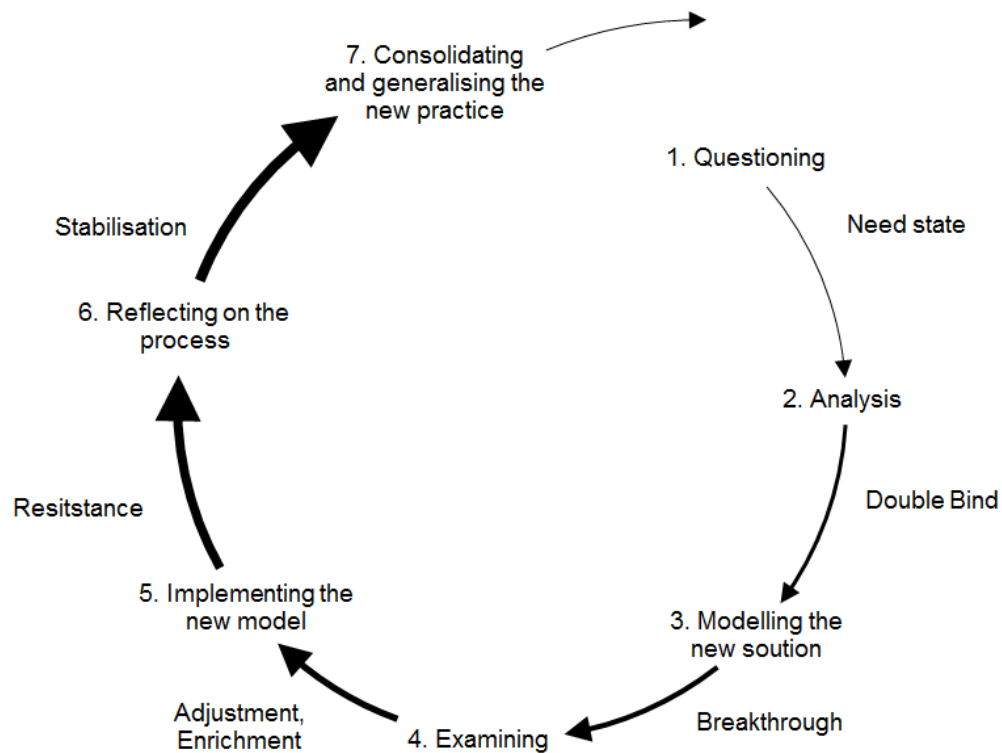


Figure 2.8 The Expansive Learning Cycle by Engeström (1999)

One aspect of note in Engeström's model is that the loop is not closed, in contrast to the others previously discussed. This allows for the actuality that the cycle does not bring the practitioner back to the same position, but instead a destination where some change(s) is observable. Naturally a spiralling path may be taken from the "end point" as a new starting point.

Looking back on the applications of expansive learning theory over two decades later, Engeström and Sannino (2010) identify a wide and varied range of research inspired by the original work. Critiques are acknowledged from researchers who consider the cultural-historical observations made in 1987 to be rendered all but obsolete with the advent of the computerised modern world (e.g. Rückriem, 2009). Young's (2001)

challenges, made from the point of view of the educational practice researcher, are broadly explained by the difference in context. A point raised that is of import to this research in general is whether the (organisational learning) theory be applied in a context where the learning is not incidental (i.e. an educational setting). Or, perhaps more usefully still: can an incidental learning process be harnessed to deliver specific learning objectives?

Other notable challenges relate to the workability of the model in the face of “the subjective problematic” (Langemeyer, 2006). Langemeyer predicts that in practice, would-be expansive learners may yield to any systemic inconsistencies encountered rather than confront them. Avis (2007) opines that, again in practice, major contradictions may be disregarded for political convenience in favour of addressing lesser effects of the root condition. In either case, doubts are raised as to whether expansive learning will lead to transformational change or just peripheral, incremental or conservative modifications.

Nonaka (1991), and later Nonaka and Takeuchi (1995), propose the SECI model of organisational learning, comprising the processes socialisation, externalisation, combination and internalisation. Each “mode” is a pattern for knowledge creation available to an organisation and relates to a conversion of knowledge between tacit and explicit states. “Socialisation”, for example, refers to the sharing of tacit knowledge between individuals (“from tacit to tacit”), and similarly information re-packaged from one explicit form to another is labelled “combination”. Nonaka considers these mechanisms useful but of limited potential for organisational learning.

The “powerful” interactions are from tacit to explicit and *vice versa*. When tacit information is made explicit (“externalisation”) it can be shared with many, and when those many then “internalise” that explicit knowledge it cultivates and progresses their

tacit knowledge bases. The model is expanded from a cycle into a spiral, to reflect that the organisation does not return to the same location on completion of a cycle and to implicitly imply one-way growth/improvement.

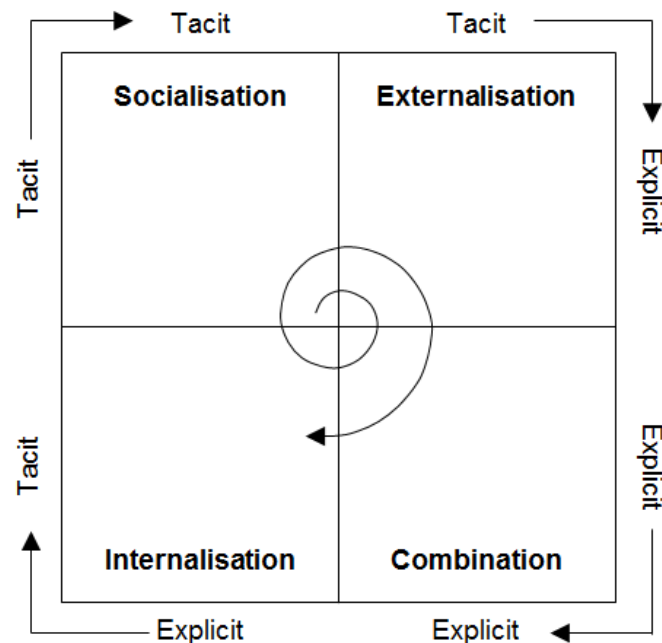


Figure 2.9 The SECI Spiral by Nonaka (1991)

Bratianu (2010) champions the SECI model as a metaphor, but considers it flawed for practical application on the grounds that tacit and explicit knowledge are differently dimensioned. Explicit knowledge has a single “extensive” dimension, whereas tacit knowledge also has an “intensive” or emotional dimension. How then, questions Bratianu, can knowledge be transferred between the two states? This overlooks a point that is perhaps more obvious; specifically, that tacit knowledge by its very nature and definition, cannot be made explicit. Were it to be made so it would almost certainly lose power rather than gain. Consider, for example, a written set of instructions on how to swim, and how poor a substitute these would be for the ability to swim.

A second issue that arises is the origin of the knowledge (tacit or explicit). Where does the new information originate? The cycle describes the same material passing

between states, possibly with some modification, but essentially without gaining. The net knowledge base of the organisation will only grow if either it acquires some additional explicit knowledge or it hires new members with desirable tacit knowledge.

Complex cyclic:

This second category of models comprises those that are based on a cyclic structure but deviate from a single recurrent path to a greater or lesser degree.

Kim's (1993) OADI-SMM model builds on an individual learning cycle that the author attributes to Fred Kofman (no associated publication), then lecturer at the MIT Sloan School of Management. The OADI (observe – assess – design – implement) cycle in turn draws from Kolb's (1984) ELT; a theme that is emerging as recurrent within this literature review. Kim's model also incorporates aspects of March and Olsen's (1975) "complete cycle of choice" which differentiates between the contributory actions taken by the individual member and those of the organisation as a whole, and Argyris and Schön's (1978) single and double-loop learning.

In Kim's view there is a level of dynamism to the organisational version of learning that makes it more complex than the individual case. He notes also that motivation and reward, significant aspects of individual learning, are also harder to understand in the organisational setting. The main focus of the model is on shared mental models (the SMM of the acronym) on the grounds that they are considered the most important source of learnt material with greatest impact on continuity of business; they are also the lens through which learnt material from other sources becomes clear. Thus, the alteration of mental models of the individual and organisation is central to the respective double-loop learning cycles. Single-loop learning at both levels also appears but does not require interaction with mental models.

Kim takes pains to make allowance within the model for individual learning that is not linked to the organisational equivalent; i.e. members are constantly learning but the organisation may not benefit/participate. Whilst this point is fair, it seems an unnecessary inclusion since there is no suggestion that involvement in organisational learning overrides the individual's capacity to learn unilaterally. It is also unclear how "organisational action" arises from the "shared mental models", or how in fact the individual and shared mental models interact directly but as separate entities.

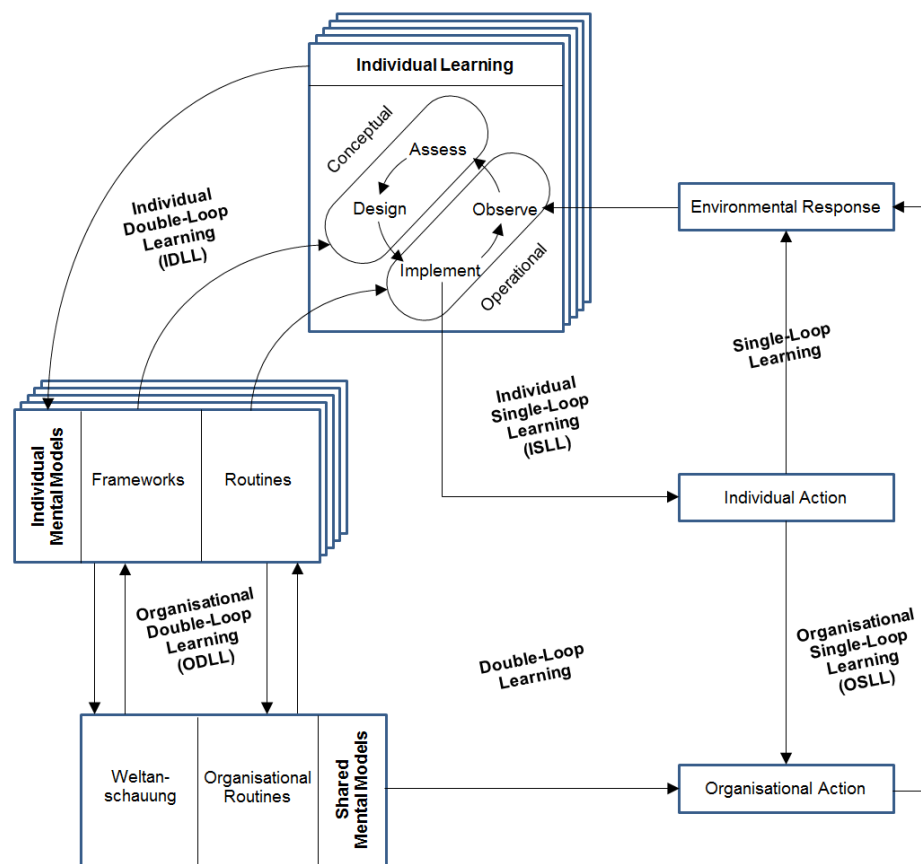


Figure 2.10 The OADI-SMM Cycle by Kim (1993)

The central theme in the work of Karl Weick is "sense-making" in organisations rather than organisational learning *per se*, however sense-making is acknowledged as a critical process in learning from experience or error (Maitlis and Christianson, 2014). Sense-making has emerged as the topic of a body of research in its own right and

refers to the process by which understanding is reached or meaning made of unprecedented, confusing or challenging occurrences. For Weick, sense-making is inherently a social process although other authors have considered it an individual, cognitive construct (Maitlis and Christianson, 2014).

Weick's 1995 work on the subject remains seminal and includes the "organisational information model" shown in Figure 2.11. The model illustrates the process by which environmental information may be used to drive adaptation to change within organisations. The first step is the "enactment" of ideas based on individual interpretations of the environmental change observed. Those interpretations found to be effective are "selected" for the collective by decision-makers and remaining information gaps identified. The most beneficial are "retained" by the organisation for future use and to provide feedback to the preceding processes.

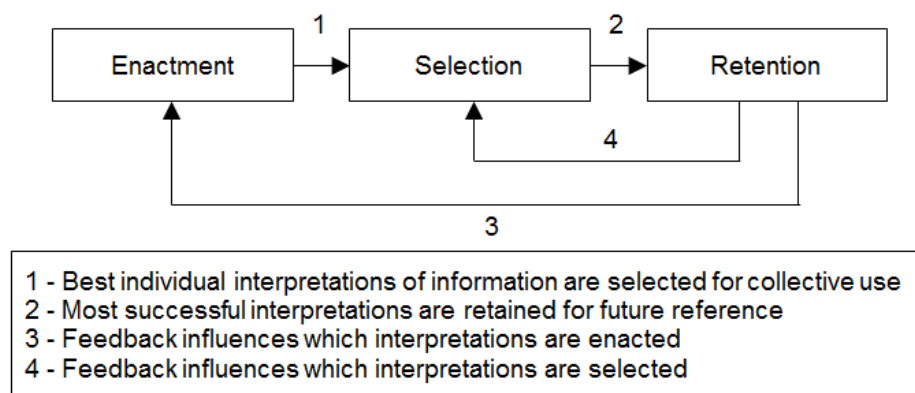


Figure 2.11 The Organisational Information Model by Weick (1995)

Helms Mills *et al.* (2010), advocates of Weick's theories, nevertheless identify some limitations in the sense-making model in that it omits to illustrate how processes are interpreted and enacted, and that it is dependent on an assumption that all collective processes can be applied democratically and equitably. Certainly, a system that relies on individuals to experiment on the basis of their own interpretations places a great deal of faith in those members. Weick's model (temporarily ignoring the feedback

loops) would appear to be an approximate inversion of Dixon's (1999) Kolb-esque cycle; the difference being that the "active experimentation"/"enactment" precedes rather than follows the reflective and selective process.

Crossan *et al.* (1999) propose a model for organisational learning that is a front-runner in recognition of a "group" level contribution to the interaction of individual and organisation. Their focus, and targeted purpose for organisational learning, is strategic renewal which in turn relies on a balance between exploration (mining for new learning) and exploitation of existing capabilities (Crossan *et al.*, 1999). The resultant "4I" model (as shown in Figure 2.12), so named because of the four processes intuiting, interpreting, integrating and institutionalising it entails, intends to show how the three levels of membership (individual, group and organisation) collaborate to achieve this renewal.

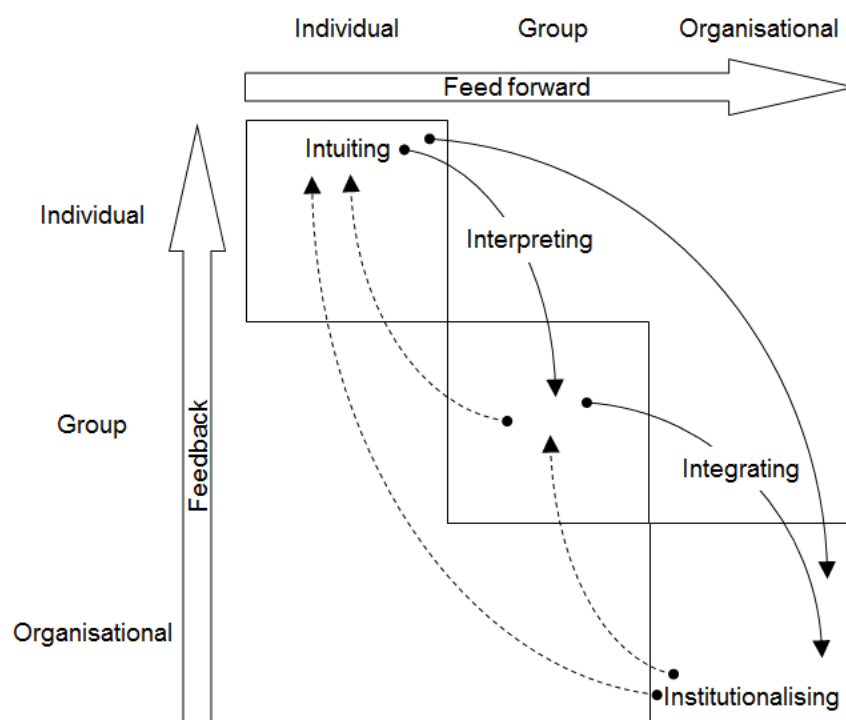


Figure 2.12 The 4I Model by Crossan *et al.* (1999)

"Intuiting" is seen to act solely at the individual level, where patterns and trends are

detected or noticed in a process that may be mostly subconscious. The “interpretation” stage is when meaning is ascribed and connections made; this spans both the individual and group levels. Between the group and organisation levels, “integration” then identifies “coherent, collective action” to be taken by relevant parties. The final part of the process is “institutionalisation”, an organisation (only) level process that commits the chosen actions to organisational memory. The “feed forward” and “feedback” shown relate to the exploration and exploitation dynamics. Exploration is when learnt material “feeds forward” from individual to organisation, and exploitation sees already institutionalised learning fed back in the opposite direction.

The model includes arrows directly from the individual to the organisation level and back, symbolising perhaps that there is some flexibility over which entities must be involved in each step. It would appear though that the interpretation and integration steps are also bypassed (by the arrows) which seems somewhat incongruent; particularly as Crossan *et al.* (1999) acknowledge an intrinsic conflict between intuition and institutionalisation.

Lähteenmäki *et al.* (2001) observe that whereas learning is typically portrayed as a cyclic process, organisational change models tend to show a stepped progression towards a goal. They contend that the two processes are both parallel and interactive, and propose a model which aims to accommodate these characteristics (the “two-way affective process model”; Figure 2.13).

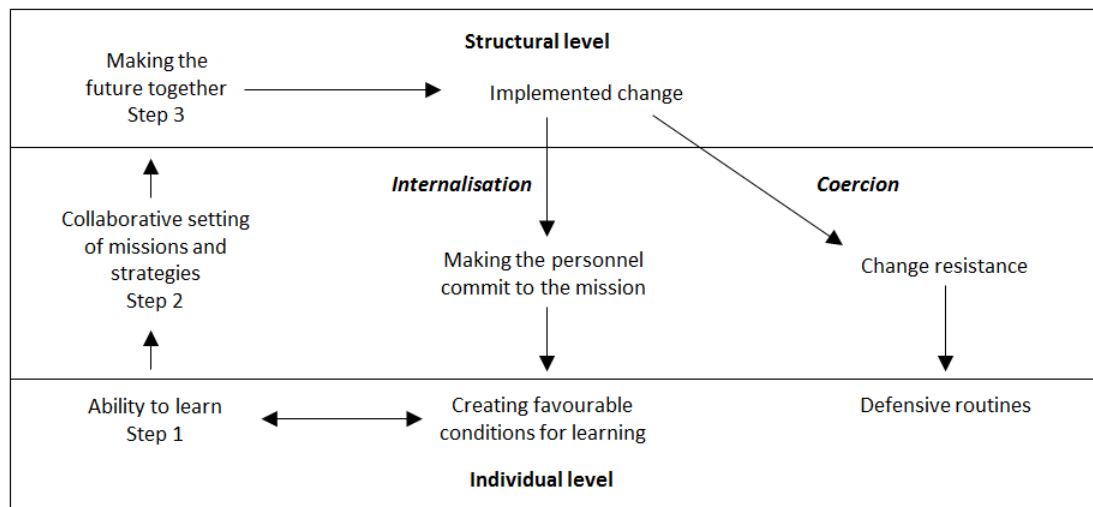


Figure 2.13 The Two-Way Affective Process by Lähteenmäki *et al.* (2001)

The model shows two ‘levels’ of activity, structural (organisational) and individual with constant interaction occurring between them. The middle ground between the two is shown as distinct but unlabelled; it is not identified as a “group” level, it more appears to be an area in which the structural and individual aspects intertwine. The key “fork” in the learning path occurs where change is implemented, and is either met with acceptance (“internalisation”) or resistance in the interactive region. Where the internalisation route is embraced, conditions favourable to further learning are created thus strengthening the process. Where implemented change is perceived as coercive, the result will be the adoption of defensive routines and a residual disinclination to learn.

Whilst the intent of this model is laudable (i.e. combining organisational change dynamics with those of organisational learning), in practice it is a difficult model to read and follow. It does not, for example, portray a stepped goal-achievement process; neither is the recurrent aspect entirely cyclic. The forked branch that leads to a dead end offers no return to the system. Overall, the main departure of the two-way affective process from the more traditional models is that it does not start with a learning

opportunity that is carried through to fruition. Instead the stages are all conditions or dispositions of the entities in question, and as such it better describes a process to establish fertile conditions for learning rather than learning itself.

Matrix/structural models:

A third category of models follows a matrix format; typically two-by-two. Whilst these are not process models as such, in that they do not attempt to describe how organisational learning happens, they are nevertheless significant because they propose systems for comparative categorisation of different learning structures, mechanisms or styles. For example, Daft and Weick (1984) hold as fundamental that organisations will differ in the way that they interpret feedback from their respective environments; this being the case a model describing organisational learning must acknowledge this variety.

Daft and Weick (1984) in fact propose a basic process-type model as a basis for their categorisation of organisational interpretation modes. It comprises “scanning”, or collecting data from the operating environment, “interpretation”, where meaning is ascribed to those data, and “learning”, which in this context equals action taken. This is clearly a simplistic model but, coupled with the two “underlying dimensions” that serve as axes, it forms the basis of the model shown in Figure 2.14.

Unanalyzable ASSUMPTIONS ABOUT ENVIRONMENT	UNDIRECTED VIEWING	ENACTING
	CONDITIONED VIEWING	DISCOVERING
Analyzable		
	Passive	Active
	ORGANISATIONAL INTRUSIVENESS	

Figure 2.14 The Model of Organisational Modes by Daft and Weick (1984)

The first dimension is the organisation's (management's) assumptions about the degree to which the external environment can be meaningfully analysed (vertical axis). The second is the extent to which the organisation is willing to intrude into the operating environment in order to conduct such analysis (categorised as "active" or "passive"). An organisation in the "enacting" mode, for example, sees little to be gained from detailed analysis but takes active steps to try out different approaches and techniques. (The RE would question whether this is in fact a coherent position as experimentation, by its nature, requires analysis of feedback.)

An intrusive company that expects answers to be discernible from the environment would exhibit the "discovering" mode, whereby market research is used to determine a suitable course of action in advance of that action. The passive company that considers the environment analysable, by contrast, perceives it as objective and generally benevolent, and so takes no steps to move outside traditional boundaries; this is the "conditioned viewing" mode. Finally, the coincidence of passive and unanalysable dimensions results in the "undirected viewing" mode, wherein "hard" data

is eschewed in favour of more subjective, conversational feedback and changes made are reactive rather than proactive.

Daft and Weick acknowledge that their model favours simplicity and generalisability over accuracy. Certainly, it seems simplistic to consider only two opposing positions in each dimension when each could be more accurately described as a spectrum. Kim (1993) also criticises the accuracy of Daft and Weick's characterisation on the grounds that they fail to consider the contribution/function of individual members within the collective. Where accuracy has been (partially) sacrificed, it is reasonable to ask what value the model contributes; to which the authors respond that the manager may learn from it (a) that their key function is interpretation and (b) that different interpretive approaches exist beyond their own. The RE would argue that these lessons are more easily drawn from (for example) the work of Argyris and Schön (1978).

Schwandt's (1994) "organisational learning systems model" (OLSM) acknowledges and builds directly onto the social action theory developed by Talcott Parsons (1951). Parsons identified four categories of human social activity, equally applicable to all levels of social actor (individual, group, organisation, society). He arranged these functions in a square matrix along the axes of "focus" (internal or external) and "purpose" (means or ends). "Adaptation" to the environment and "goal attainment" are the externally orientated means and ends functions; "pattern maintenance" or behaviour reinforcement and "integration" are the internal equivalents.

Schwandt developed Parson's model to focus specifically on organisational learning systems; and subsystems. His intention was to provide a lens to visualise how organisational members are complicit in the social functions associated with learning.

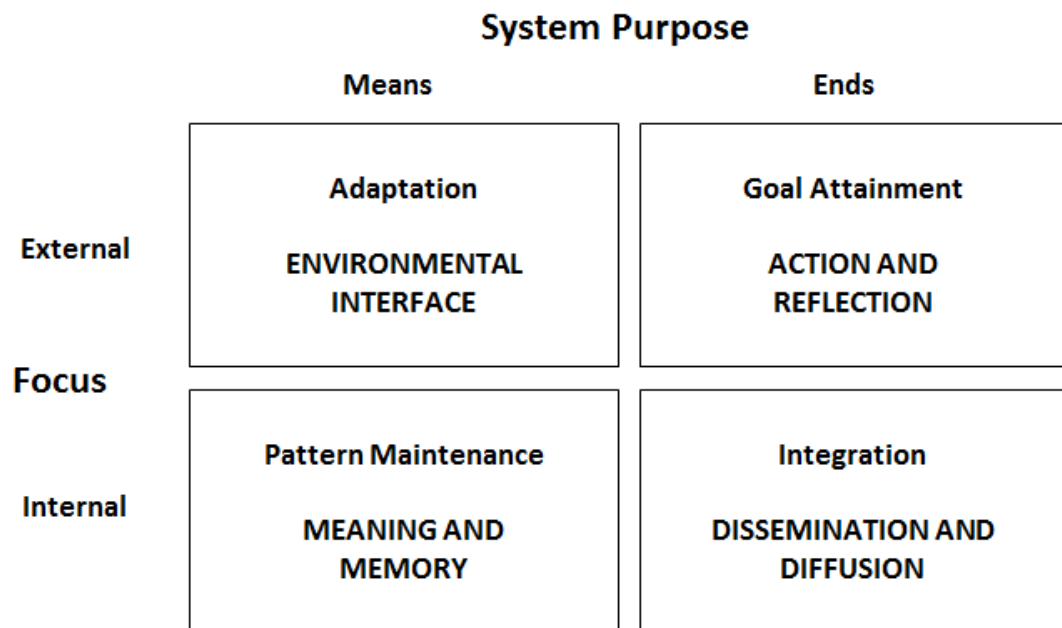


Figure 2.15 The Learning Subsystems Model by Schwandt (1994)

The “environmental interface” subsystem refers to the activities that function as a portal through which information can enter the organisation. The “action-reflection” subsystem interprets and derives value from information gathered. The “dissemination-diffusion” subsystem spreads and integrates useful knowledge within the organisation. “Meaning and memory” regulates the other activities by establishing and maintaining criteria for judgement and control of information flowing between the other subsystems, and storing information including norms, values and shared beliefs of the organisation.

Since the subsystems do not function in isolation, Schwandt (1994) postulates “interchange media” linking each with the others. The environmental interface, for example, provides new information to its three neighbouring subsystems. The action-reflection subsystem provides goal reference knowledge; the dissemination-diffusion subsystem sends information on structuring; and for the meaning and memory subsystem, the output is sense making information.

As with Daft and Weick's (1984) matrix this model focuses on generalisability, but the outcome is descriptive of a structure into which the majority of traditional process models would fit well. The "action and reflection" and "dissemination-diffusion" subsystems are home to the process steps "integrate" and "interpret" (from Dixon, 1999 but with equivalents in many of the traditional models), and "act" and "generate" take place at the "environmental interface". An interesting additional focus in Schwandt's (1994) model is the identification of a subsystem dedicated to pattern maintenance. Whilst a number of models acknowledge this as an organisational capacity, identifying it as a subsystem raises the question of whether storing norms and values is an explicit function of some nominated representative or group or something implicit to a social structure.

Lave and Wenger's concept of "communities of practice" sits awkwardly in a section on matrix models, yet there is a key commonality with the models above in that different types of learning emerge on different "axes". For these authors, humans are first and foremost social beings who acquire knowledge by participation in valued activities (Lave and Wenger, 1991). The purpose of learning, organisational or otherwise, is not mastery as such but to engage with the world more meaningfully; with greater understanding. Collective learning leads to the establishment of communities bound by sustained shared enterprise ("communities of practice"), of which a person will belong to several at any one time.

Wenger (1998) goes on to describe a series of components required to characterise a social theory of learning (in which individual and collective learning are indistinct), each of which is associated with a particular learning dimension. Although the peripheral components (Figure 2.16) are arranged around "learning" as the central theme, they are all intrinsically interconnected. Wenger suggests in fact that the model remains

coherent with any component in the centre.

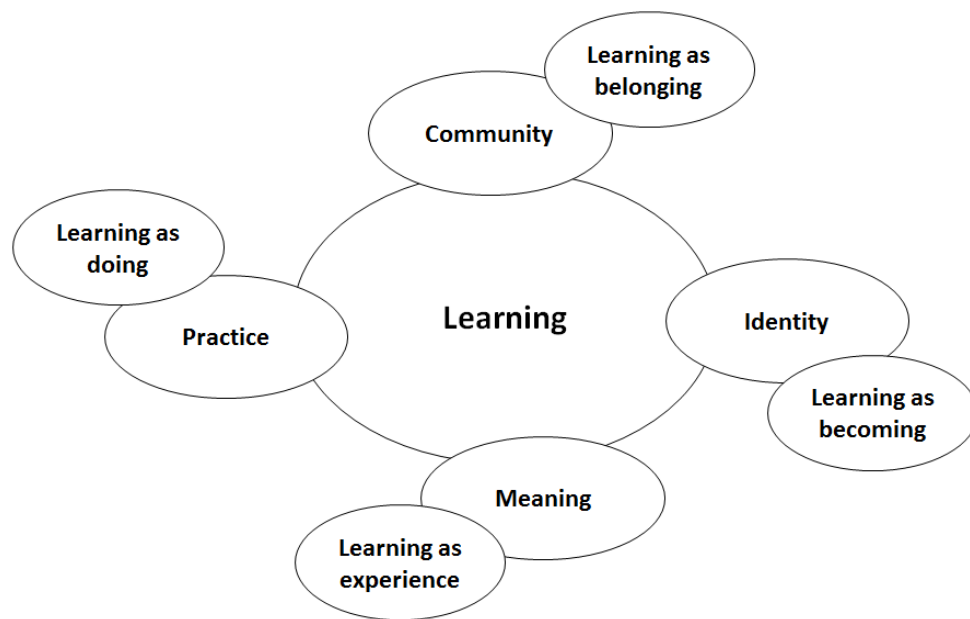


Figure 2.16 The Social Theory of Learning Model by Wenger (1998)

Learning requires (according to Wenger), “...a way of talking about our (changing) ability; ...shared historical and social resources; ...social configurations in which our enterprises are defined; and ... personal histories of becoming in the context of our communities”, relating respectively to meaning, practice, community and identity aspects of learning. In essence, learning is not about knowledge as such but about acquiring the ability to function as part of a community of practice (whether social, vocational, educational etc.) by LPP; legitimate peripheral participation (Lave and Wenger, 1991). The “lesson” is therefore inextricably linked to the community context in which it is learnt (Seely Brown and Duguid, 1991).

Whilst the concept of LPP offers a very different, insightful and flexible approach to organisational learning, it is nevertheless open to a fairly fundamental criticism in that it does not allow the possibility of novelty. If humans are constantly working to acquire the skills and expertise of their fellow community members, how does humanity as a whole ever increase its collective capacity? As a further, practical consideration, it is

unclear how communities form from the outset, or what LPP would predict in a scenario where a team with different skillsets is assembled for some project or purpose.

2.2.2. Recent Models

Models floated more recently and demonstrating the continued interest in and relevance of organisational learning as a discipline of study, include those proposed by Duffield and Whitty (2015), Anderson and Lewis (2014) and Lewis (2014). They are considered separately from the older models as they have had limited opportunity to influence and permeate the work of others. As a general comment these models fall into the more complex category, perhaps suggesting a general perception that traditional cyclic models have been found wanting to a degree.

Duffield and Whitty (2015) take the view that the practical usefulness of pre-existing organisational learning models to managers is/was limited. To them, the main challenge impeding learning is that organisations are unable to effectively utilise the knowledge/products of learning. Citing the “Swiss Cheese Model” (Reason, 1997) normally used to describe and mitigate failures of safety process as an example of a model that is both practical and of proven efficacy for catalysing learning, they propose an adaptation of the model to describe effective organisational learning from experience. The “barriers” in the SYLLK model are divided into “people” and “systems” aspects; holes must be aligned in order to allow the effective passage of a lesson from the project to the collective knowledge, and also to be applied to (other) projects.

Conceptually, this model is something of a departure from Reason's (1997) incarnation, in that in the original Swiss Cheese model passage through the barriers meant a failure of process rather than a success. It is difficult, then, to understand what the “holes” in the barriers represent in Duffield and Whitty's (2015) model, since for Reason they are localised failures and breakdowns of vigilance. The key lesson from

Reason is that the integrity of all barriers must be maintained as fully as possible to prevent incidental alignment of gaps; if alignment of gaps is now desirable (as per SYLLK), how is this to be achieved?

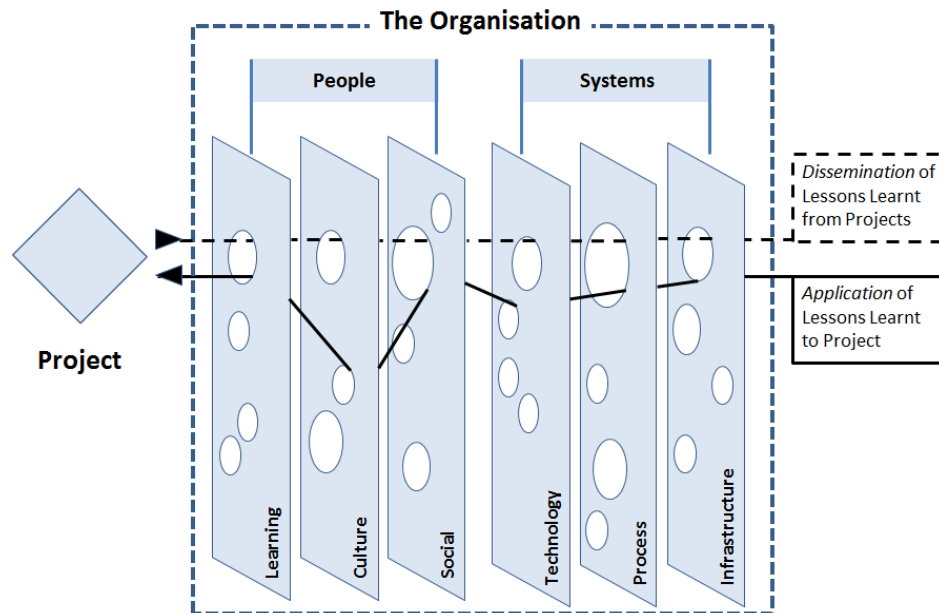


Figure 2.17 The SYLLK Model by Duffield and Whitty (2015)

Duffield and Whitty (2015) “test” their model by inviting review and feedback from a focus group, with some encouragement discerned. They go on to conduct more empirical trials and refine the model (Duffield and Whitty, 2016a; Duffield and Whitty, 2016b; Duffield, 2016) and in fact propose a process for the alignment of gaps (Duffield and Whitty, 2016b). This centres on a workshop convened to identify and understand organisation-specific barriers and “facilitators” (gaps), before identifying ideal practices and measures required to bring existing practice in line with the ideal; a process which echoes Checkland’s (1981) soft systems methodology.

Anderson and Lewis (2014) draw from transactive memory system (TMS) theory and use a causal loop diagram (CLD) format to model the interaction of the individual and collective learning (qua knowledge flow) cycles. The point at which the two meet is the “central task completion rate”. Each entity apparently draws their own learning,

knowledge and impact on productivity from their shared experience (of task completion). Each entity also has an embedded forgetting loop detracting from their cumulative knowledge base. The longer loops extending to the right of the diagram account for the “second interdependency between collective and individual learning posited by TMS theory, ...that the overspecialization of individuals’ knowledge has negative effects on the group’s ability to generate new collective knowledge (Anderson and Lewis, 2014).

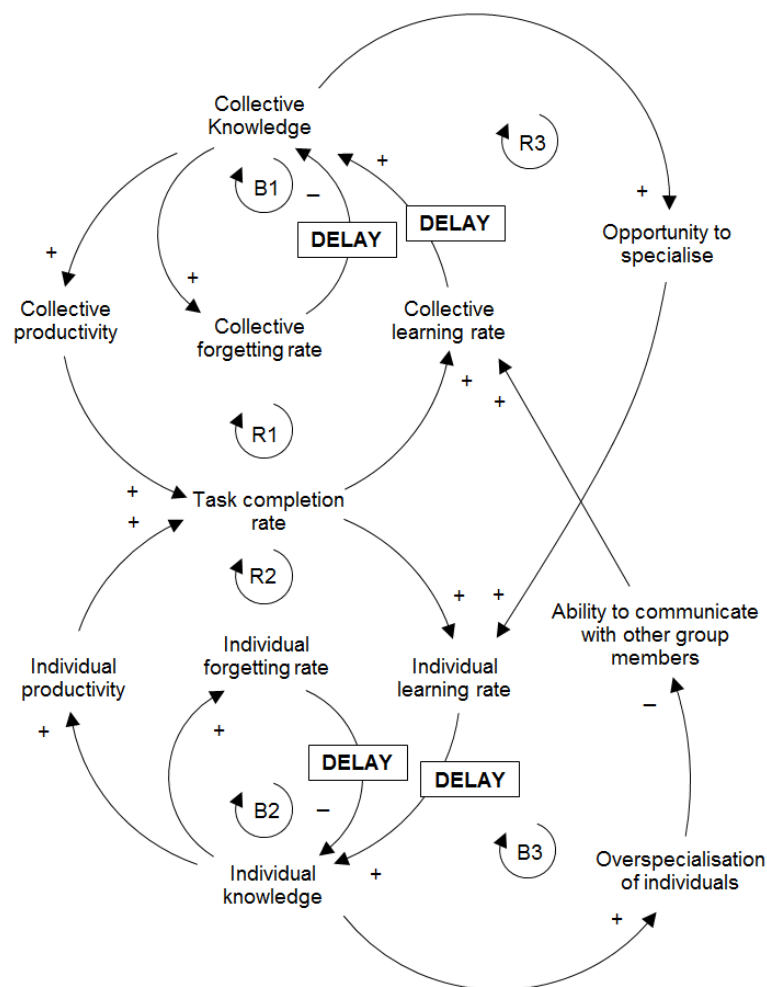


Figure 2.18 The TMS Learning System Model by Anderson and Lewis (2014)¹⁶

¹⁶ This dynamic model is then used to consider the effects of organisational disruption (e.g. restructuring, a significant shift in the industry) on the flow of knowledge.

A key weakness of the CLD model is that it is unable to capture the nuance of the relationship between individual and collective knowledge; they are kept entirely distinct rather than overlapping or with the former as a subset of the latter. The actors in this organisation are then each single member and the collective from which they are distinct (i.e. everybody else).

The final model reviewed herein is the ADIIEA (automation – disruption – investigation – ideation – expectation – affirmation) model, also referred to as “the innate lesson cycle”, offered by Lewis (2014). The model, which is essentially cyclic around the outer circle shown in Figure 2.19, has a number of novel features; most notably that progression through the cycle is not a stepwise progression along a path but a series of moves in either direction. The direction of travel is determined by whether the immediate question is “how” something is to be achieved or “why”. At the centre of the circle are the three “workability beliefs” (won’t/could/does work) and modes of potential response; questioning, reflection and reaction.

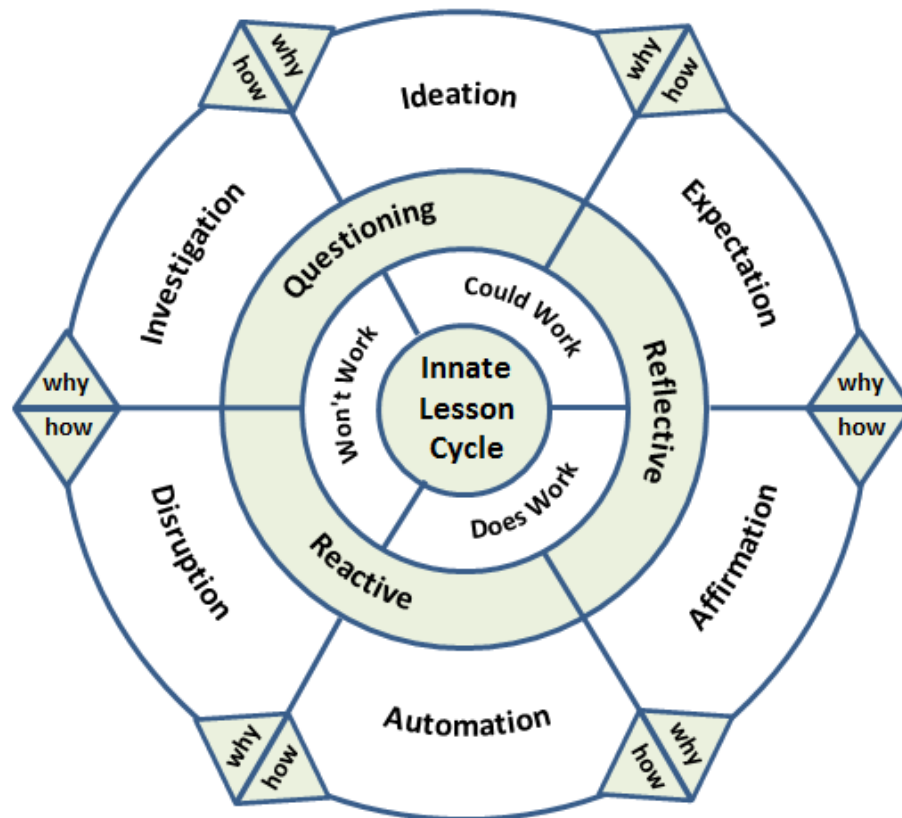


Figure 2.19 The ADIIEA Model by Lewis (2014)

Lewis (2014) differentiates between “half-pipe” and “full-cycle” learning processes, the latter referring to one which stays within the bottom half of the model, and the former using the full wheel. “Half-pipe” learning serves to sustain and optimise current processes and generated outcomes; this is broadly equivalent to Argyris and Schön’s (1978) single-loop learning. “Full-cycle” learning is the only mode that allows for organisational change, although it is not described in terms that suggest the authors have a parallel with double-loop learning in mind; the kind of change envisaged appears to be incremental rather than transformational.

Another category of models developed seeks to explain not how organisational learning may work but how it may mediate relationships between other organisational factors (e.g. Jorgensen, 2004; Chiva *et al.*, 2014; Guță, 2014; Tang, 2015; Raj and Srivastava, 2016; Kashif Imran *et al.*, 2016; Lei *et al.*; 2017). This category is of

significance to this review not because of the content of the models but because they require consideration of how measurement of organisational learning may be achieved.

Other models developed address the quantification of learning curve drivers/mediators (e.g. Attia *et al.*, 2016); identify mediators for organisational learning (e.g. Alonso-Almeida *et al.*, 2016); draw distinctions between types of organisation from an organisational learning perspective (e.g. Carré and Pearn, 1992); describe extra-organisational learning (e.g. Zietsma *et al.*, 2002); or model knowledge transfer processes (e.g. Wahab, 2009). Some of these models or the constructs supporting them are referenced elsewhere in this chapter, but they fall outside the scope of this summary of models describing the process of organisational learning.

2.2.3. Key Commonalities

One theoretical theme that approaches the ubiquitous is the drawing of parallels between individual and organisational learning processes (Döös *et al.*, 2015), and consideration of workable constructs for the latter to borrow from the former. Whilst there are other contributors (e.g. assimilation theory; Fraser and Novak, 1998), the individual learning theory that stands out in this regard, as has already been seen, is Kolb's (1984) ELT.

The Kolb-esque Process

The ELT cycle is widely considered a solid foundation to support the idea that organisational learning processes will mirror those relating to the individual (e.g. Lähteenmäki *et al.*, 2001), despite the criticism that its neglect of the social, cultural and historical aspects of human activity results in an oversimplified model (Holman *et al.*, 1997). Out of the myriad theories about individual learning it is perhaps a logical

parallel for the organisational context since an organisation, regardless of whether or not it can be considered a learner, is rarely a student. Organisation learning is generally seen as something happening during the course of normal operation, i.e. experientially, not as an academic exercise.

Organisational learning models discussed that align broadly with of Kolb's ELT cycle are summarised overleaf.

Table 2.3 Comparison of elements of ELT and organisational learning models

Kolb	Dibella <i>et al.</i>	March and Olsen	Weick	Dixon	Engeström	Kofman	Deming ¹⁷
1984	1996	1975 ¹⁸	1995	1999	1999	1992	1982
ELT Cycle	Organisational Learning Cycle	Complete Cycle of Choice	Organisational Information Model	Organisational Learning Cycle	Expansive Learning Cycle	OADI Cycle	Quality Cycle
Concrete Experience	Knowledge Acquisition	Environmental Actions or “Responses”	Enactment	Generate	Questioning ¹⁹	Observe	Check
Reflective Observation		Individuals’ “Models of the World”	Selection	Integrate	Analysis	Assess	Act
		Individual Action					
Abstract Conceptualisation	Knowledge Dissemination	Organisational Actions “Choices” or “Outcomes”	Retention	Interpret	Modelling	Design	Plan
					Examining		
Active Experimentation	Knowledge Utilisation		Enactment	Act	Implementing	Implement	Do
					Reflecting		
					Consolidating		

¹⁷ Comparison drawn by Smith (1999). See overleaf

¹⁸ Although March and Olsen’s model pre-dates Kolb, it is interesting to note that they specifically mention learning from experience, considering it one of only two fundamental processes (along with rational calculation).

¹⁹ Question differs from concrete experience in that the latter is unprompted; a connection made or idea occurring whilst engaged in other activities. The comparison is allowable because a question may equally initiate a process of reflection and change – but where did the question originate if not from an observation or idea?

A further parallel of note is drawn by Smith (1999), who identifies the Kolb ELT cycle as analogous to (an interpreted version of) Deming's (1982) Quality cycle as reproduced in Figure 2.20.

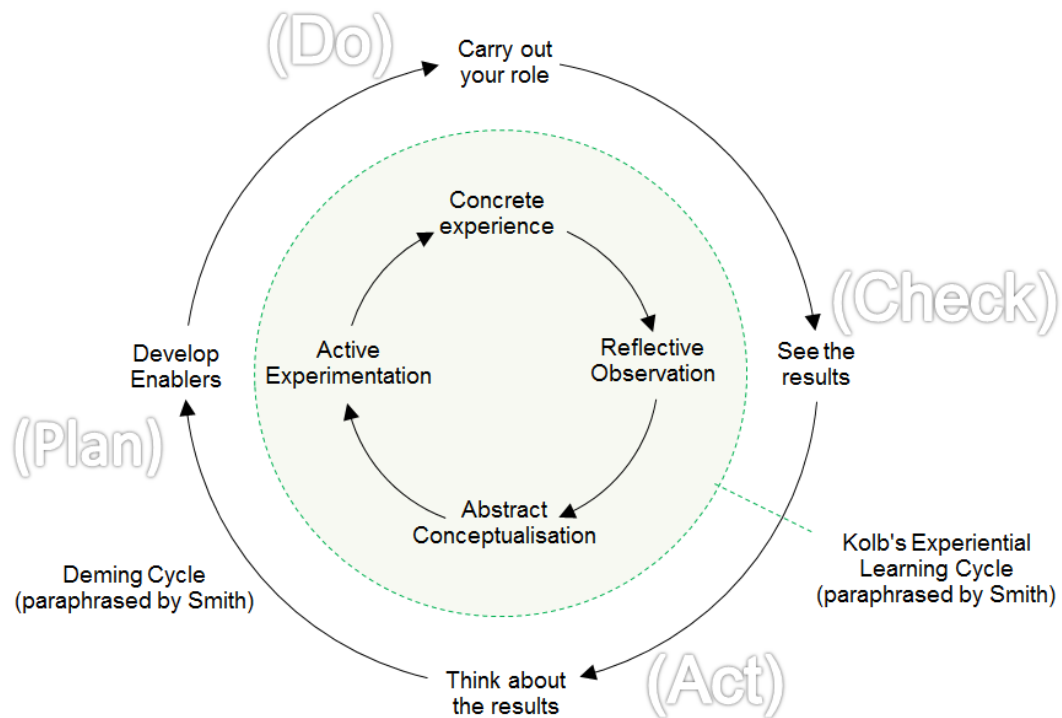


Figure 2.20 Comparison between Kolb Cycle and Deming Quality Cycle (Smith, 1999)

The comparison drawn by Smith is a good fit, since both cycles have a single active step and three strokes that are essentially reflective, but the alignment is erroneous. The active step in the ELT cycle is “active experimentation”, and the equivalent in the Deming cycle is “do” (or “carry out your role” as Smith proposes). The “concrete experience” is where the results (of the active step) are seen; the “reflective observation” is where the participants “think about the results”; and the “abstract conceptualisation” is where changes/enablers are considered. The comparison shown in Figure 2.20 is therefore misaligned.

This adjustment is significant because it prompts the question of whether either cycle is indeed a closed loop, and this introduces the second notable commonality; the cyclic nature of organisational learning.

Learning as Cyclic

Of sixteen organisational learning models reviewed herein, twelve are either entirely cyclic or have cyclic features. Of these, three quarters show loops that appear schematically to be considered closed, in that the final stage of the process returns the user to the starting point. The exceptions are the models offered by Engeström (1999), Nonaka (1991) and Lähteenmäki *et al.* (2001). Engeström portrays the stage following learning as leading as if to follow a wider orbit (Figure 2.8), suggesting a change in the status quo as the result of learning. Nonaka's iterative process is a spiral rather than a closed cycle, adding a dimension which symbolically prevents direct repetition (Figure 2.9). Lähteenmäki *et al.* present a forked path, one branch of which returns to the start of the cycle and one which appears, confusingly, to terminate (Figure 2.13).

The majority that show cyclic process might concede that Nonaka's spiral is more accurate a learning path, since learning that does not lead to change or progress is of little benefit, and that the "cycle" is only an illustrative convenience. On inspection of the Kolb-esque cycles shown in Table 2.3, it can be seen that each has a starting "stroke", in that an observation or idea must occur, a unit of new knowledge or input from the environment must be attained, or a question posed in order to initiate the learning process. It serves no practical purpose to experiment or take new action without an idea or objective to drive such activity. This being the case, it must be acknowledged that learning is not truly cyclic because there is an order of steps that is not indiscriminate.

Each learning event, then, is a linear process which has a finite path and duration. What the cycle in fact represents is that the pursuit of learning is continuous, and that the initiation of one learning event does not inhibit the search for or initiation of others. It is important to recognise that the cyclic or spiral representation is more applicable to the case of individual learning, where a single person's actions may be considered a single path, than it is to the organisational context. The activities of the organisation

are a body of actions too diverse and distributed to be considered a single path which can be channelled into a particular phase of the learning cycle in entirety. Moreover, an organisation (or an individual for that matter) may have a number of learning events or cycles ongoing over different timeframes, concurrently or overlapping one another.

The cycle or spiral representation is a fair compromise between portraying the complex reality and providing a practical, accessible model. It could perhaps be improved upon by a model which drew a distinction between the working practice (evolving as a result of learning) and the learning process itself.

2.2.4. Summary and Conclusions

There is clearly no shortage of models past or present that attempt to describe the organisational learning process. Such a number of different proposals evidences a widespread dissent over the details, however the aspects that are common are strongly reinforced by the regularity with which they appear. These are:

- The analogous relationship between individual learning and organisational learning; the latter is almost unquestioningly assumed to be a close relative of the former.
- The assumedly cyclic nature of organisational learning; in fact, by virtue of association with individual learning.
- The invocation of Kolb's (and Fry, 1976) experiential learning theory in particular (as applicable to individual learning), and associated cycle, as a model for organisational learning.

These features contribute substantially to the Phase 1 Action Research study, forming as they do the basis for assessment and development of organisational learning practice within the host company OGCom.

2.3. The Learning Organisation

This Section examines the theory surrounding the Learning Organisation, first (for clarity) establishing it as a concept that is distinct from organisational learning. Next the nature of this distinct, persistent concept is mooted, with the conclusion drawn that it is synonymous to learning culture (or the hypothetical apex of learning culture). Finally, the relevance of the (30-something) concept is considered, following a number of recent challenges to its longevity in the associated literature. It is concluded that what remains pervasive, albeit answering also to other names, is the idea that organisations can be made to work more effectively than they typically do.

The concept of 'the Learning Organisation' has been championed most widely by Senge, whose work '*The Fifth Discipline: The Art and Practice of the Learning Organization*' is still considered seminal. Senge (1990) proposes that a Learning Organisation is one in which:

"people continually expand their capacity to create the results they truly desire"

"new and expansive patterns of thinking are nurtured"

"collective aspiration is set free"

"people are continually learning how to learn together"

Other popular definitions are provided by Watkins and Marsick (1993):

"[A learning organisation is] one that learns continuously and transforms itself."

Mayo and Lank (1994):

"A learning organisation harnesses the full brainpower, knowledge and experience available to it, in order to evolve continually for the benefit of all its stakeholders."

And Pedler, Burgoyne and Boydell (1991):

“[A learning organisation is] an organisation which facilitates the learning of all its members and continuously transforms itself.”

These definitions are descriptive of a type or category of organisations, generally identified as those that exhibit certain characteristics or behaviours. For Senge (1990) the five “pillars” of the learning organisation are: team learning, building shared vision, use of mental models, personal mastery (or an enthusiasm for achieving such from organisation members) and, most significantly according to Senge, systems thinking.

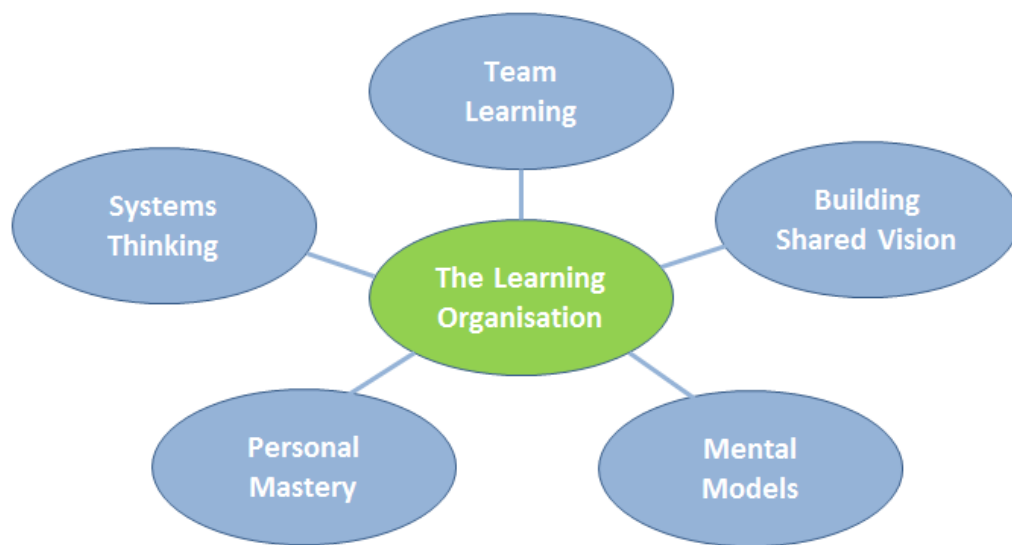


Figure 2.21 Component “pillars” of the Learning Organisation (Senge, 1990)

As will befall such a popular work, Senge’s ideas have been criticised widely on varied grounds, such as insufficient social and historical placement (and clarity) of ideas (Flood, 1998); optimistic or utopian theorising (Seddon and O’Donovan, 2010) failure to follow the tenets of the systems thinking that he espouses (Flood, 1998); and on the grounds that it is fundamentally flawed both as a structural model and as a practice (Caldwell, 2012). He does not adequately explain the “...*organising practices by which learning to lead and leading to learn are shared or distributed in organizations...*” (Caldwell, 2012b) or how dilemmas intrinsic to the organisational hierarchy and managerial relationships can be overcome (Steiner, 1998).

Other important contributions to the development of Learning Organisation theory

include Pedler *et al.* (1991), Watkins and Marsick (1993), de Geus (1999), Garvin (2000), Garratt (2000) and Marquardt (2002). Pedler, Burgoyne and Boydell proposed the “E-flow” model, one quite different in form than Senge’s and with similarities to some of the organisational learning models discussed in Section 2.2. They also identify eleven dimensions of the Learning Organisation which range from the practical (e.g. “formative accounting and control”) to the strategic (e.g. “participative policy making”).

Watkins and Marsick (1993) use the sculpture metaphor of their book’s title (1993) to illustrate the development of the Learning Organisation as a process of uncovering and moulding an existing, dormant form. De Geus’ (1999) Learning Organisation is a more organic, “living” model for which learning capability is a function of environmental or contextual integration. Garvin (2000) identifies the five activities of the Learning Organisation as systematic problem solving; experimentation; learning from past experience; learning from others; and transferring knowledge.

Garratt (2000) distinguishes three types of learning within the organisation: “policy”, “operational” and “strategic” which refer to the external perception and effectiveness of the organisation, and the degree to which it can understand its failures respectively. Marquardt (2002) proposes a System Learning Organisation Model (Figure 2.22) with five distinct subsystems that converge and combine to enhance the quality and impact of learning.

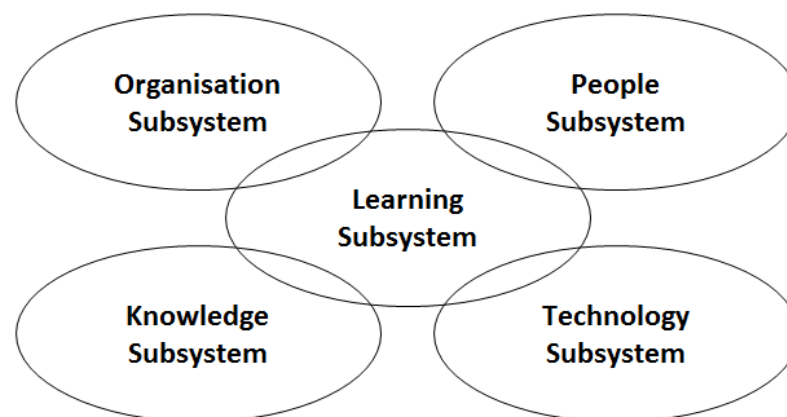


Figure 2.22 The System Learning Organisation Model by Marquardt (2002)

What is notably common to these, and many other works on the subject of the Learning Organisation, is that they focus more on characteristics or preconditions for learning rather than the actual (organisational) learning process.

2.3.1. Distinctness of Concepts

One area of widespread dissent in the literature on the Learning Organisation is whether or not it is conceptually distinct from organisational learning; this has long been the case. It does not help that the meaning of the words themselves, particularly when aligned in either order, is ambiguous at best (He-Chuan, 2003). For some authors/researchers, a Learning Organisation is *ipso facto* highly effective at organisational learning, and conversely that a company skilled at organisational learning must be a Learning Organisation (e.g. Garvin, 1993; Nyame-Asiamah and Patel, 2009). Other authors remain silent on this debate and invoke only one theoretical construct or the other, maintaining a distinction by omission. Still others consider the distinctions critical and take pains to make them clear (e.g. Easterby-Smith *et al.*, 1999; Örténblad, 2001).

For Tsang (1997), who is credited by Burnes (2000) as the first to draw a clear distinction between the disciplines, they are distinct but he makes the case for their integration. Tsang characterises organisational learning theory as relating to the question “how does an organisation learn?”, and considers the central question in Learning Organisation theory to be “how should an organisation learn?” This distinction between the descriptive (what actually happens) and prescriptive (what should ideally happen) strands is corroborated and further developed by others (e.g. Ayas, 2001; Sun and Scott, 2003).

Örténblad (2001) reviews the literature (at that time) and finds fault lines between the two relating to the character of the subject (organisational learning being a process and the Learning Organisation being an organisational form); to the degree of

normativity; and to the typical groups to whom they are of interest. He goes on to promote their separation instead on the grounds of learning subject, and the location where the resulting knowledge comes to reside. Since there is dissent on both of these points within either category (as previously discussed), these would seem inconclusive bases for distinction. Örténblad (2001) stops short, also, of explaining why the distinction is important, focusing only on how it could or should properly be made to ensure clarity.

One extremely prevalent feature of the various works on organisational learning is that it is assumed to mirror the process of individual learning, and in particular experiential learning. As discussed in Sections 2.1.2 and later 2.2, such learning originates not from an MKO in a learning-centric environment, but from interaction with the learner's environment. The contrary category of learning is academic learning, a separate strand of theory in individual learning, which focuses on the learning entity acting as a recipient for the transfer of knowledge or skills from an MKO. It is with the academic learning tradition that Learning Organisation theory is closely aligned.

"Top-down" academic learning at organisational level would require the introduction of an MKO to provide instruction towards a specific end; this is exactly the scenario that prevails throughout Learning Organisation literature. Although works that serve as guides for would-be Learning Organisations in development (e.g. Senge *et al.*, 1995; Thurbin, 1994; Garvin, 2000) are written as if to enable the inexperienced to act for themselves, it should be noted that these authors all provide, or have provided, instruction on a consultative basis. Massey, C. and Walker, R. (1999) in fact identify the consultant as critical to the achievement of organisational learning and development.

It is not possible to say definitively whether a typical intervention intended to develop a Learning Organisation will use the services of an MKO since not all such case studies are reported. In Section 2.4, a sample group of case studies is introduced that was

drawn from the papers published in “The Learning Organisation” journal²⁰. Of the 27 companies featured, it is discernible in 23 whether or not a specialist consultant was involved in the process, and of these, 70% introduced an expert. Moreover, the interventions described in these case studies, and by Senge *et al.* (1995), Thurbin (1994) and Garvin (2000) to list but a few, aim to transfer or create specific skills. This is effectively a curriculum rather than something absorbed circumstantially (as would be the case with experiential learning), and therefore consistent with the academic learning tradition.

Three further arguments are submitted to support the case for considering the two as independent ideas; the justification for their separation being implicit therein. Firstly, the identified “father” of the younger concept made them so. Senge did not conceive a Learning Organisation that was simply adept at organisational learning (as then understood); he proposed a concept that was both intended and widely received as novel. That numerous overlapping incarnations have since been re-imagined does not invalidate this original achievement.

Secondly, it is (appropriately) scientifically cautious to assume a distinction unless none can be found. If the bodies of theory are approached with the supposition that they are one and the same, it is possible that nuances between the two are overlooked. If so, the subsequent research may be built on an unstable and incomplete foundation, undermining the exercise and potentially detracting from, rather than progressing, the collective understanding. No such risk is incurred if differences are assumed that turn out not to exist.

Finally, a clear distinction can be seen if equivalents for the two concepts are sought within the field of individual learning (a defensible premise since the inverse comparison is often invoked). Organisational learning applied to the individual is

²⁰ Published by Emerald Group

analogous to personal learning. What would be said, though, about the “Learning Individual”; one who displayed systems thinking, personal mastery, clear vision etc.? It is imagined that that person would be complimented not on their learning capacity (although such compliments might well be deserved) but on their efficiency, clarity and general effectiveness. Similarly, these are the qualities that would be obvious to the observer in a genuine Learning Organisation.

The distinction between the concepts becomes more insurmountable still if the choice is made to consider the learning subject of organisational learning to be the organisation itself, as herein. Although it might seem logical to think that if the entity that learns is the organisation then organisational learning can only occur in a Learning Organisation, in fact the typical position of Learning Organisation theorists is that the learning is focussed at individual level only (or at least primarily).

This duality having been proposed, the options for interrelationship of the two concepts can be categorised:

- The Learning Organisation may be defined in such a way that it is entirely unrelated to aptitude for organisational learning. Senge (1990) for one takes no clear position on the latter when outlining his description of the former. Group Learning appears as a pillar of the Learning Organisation, but the group in this case is a subset of a larger collective. A Learning Organisation, therefore, may not be adept at organisational learning, and conversely an organisational entity that does learn effectively may still fail to classify as a Learning Organisation.
- The Learning Organisation may be envisaged as a standard the achievement of which will produce or enhance organisational learning. Pedler, Burgoyne and Boydell (1991) include, for instance, only an indirect reference to improved learning in their 11 characteristics of the Learning Organisation; an “...arrangement of reporting and control systems to facilitate learning”. If the concept is imagined such that organisational learning is an incidental facet, it

follows that achieving Learning Organisation status (as defined) causes emergent learning capability of producing/enhancing that effects; it does not have to be the only means of doing so necessarily.

- The Learning Organisation may be defined directly in relation to its sister concept, i.e. as an organisation that excels at organisational learning (e.g. Reynolds and Ablett, 1998). This inverts the relationship from the previous scenario and dictates (perhaps unintentionally) that the Learning Organisation is one effect caused by mastering organisational learning (as questioned by Chan *et al.*, 2004). Continuous learning by the organisation is central to Watkins and Marsick's (1993) definition, for example.
- The final possibility is that the Learning Organisation may be defined in a way that relates to organisational learning but in a non-causal manner; for example, if one acted as a mediator for the other. This type of relationship is under-represented in the literature but has been considered by some authors (e.g. Skuncikiene *et al.*, 2009).

This taxonomy helps to home in on what the Learning Organisation actually is as a concept, since view differ on this and more specifically whether it should be viewed as an achievable end.

2.3.2. The Nature of the Learning Organisation

Dibella and Nevis (1998) view the Learning Organisation theory as a triumvirate of distinct paradigms: the normative, the developmental and the capability perspectives.

The Capability perspective is the view taken by Dibella and Nevis. Whereas the other two paradigms hold learning as a discontinuous, idealised process; the capability perspective holds that every organisation is continually learning and has a certain and idiosyncratic learning capability. Robinson *et al.* (1997) agree: "*All organizations are learning organizations, always*"; it is clear from the context that they mean that all

organisations learn (always) rather than that all are “Learning Organisations”. The challenge in developing organisational learning is not, therefore, how to create it but how to optimise and harness the processes intrinsically or extrinsically practiced by the particular organisation. This perspective finds far greater resonance within organisational learning theory, focusing as it does on process rather than characteristics.

The normative perspective sees learning within organisations as something that takes place only under a specific set of conditions (Dibella and Nevis, 1998). Senge’s five pillars for example, may be seen as prerequisites for realisation of the Learning Organisation. This perspective is commensurate with a world view that the behaviour of organisations must be governed by the decisions taken by its management. Learning Organisations, therefore, occur only where necessary measures are introduced by the leadership. Furthermore, there is an inherent assumption that it is within the capabilities of any organisation to become a Learning Organisation provided the appropriate actions are taken. For those authors and practitioners offering instruction on how to become Learning Organisations (e.g. Senge *et al.*, 1995; Thurbin, 1994; Garvin, 2000), the end must fundamentally be an achievable one.

Finally, the developmental perspective is based on the view that organisations develop and evolve organically as determined by their size, age, maturity, industry pressures etc. (Dibella and Nevis, 1998). Emergence of organisational learning is a phase in the lifecycle of that organisation rather than a goal to achieve. Learning approach evolves with the company; different approaches changing in fitness for purpose as the organisation transforms. The Learning Organisation concept represents the apex of maturity of the entity’s development, but its realisation depends not so much on any intervention (although it may be possible to introduce favourable or catalysing conditions) as on environmental and internal, interactive factors. It remains, however, a state that exists whether controllable or not.

For some theorists, the Learning Organisation is not so much an achievable objective as an ideal to which organisations may aspire. Örtenblad (2001) justifies such a conclusion on the grounds that developing Learning Organisation characteristics is something that is supposed to benefit any organisation regardless of current status. For Pedler *et al.* the target is remote but perhaps reachable: the Learning Company (Organisation) is "...a vision of what might be possible" (Pedler *et al.*, 1991 – emphasis added). For Drew and Smith (1995), the Learning Organisation is a metaphor that describes a spirit or ethos rather than an organisational structure. Such views implicitly acknowledge the developmental perspective and the presence of factors outside the organisation's control.

There are two questions at the heart of Dibella and Nevis' perspectives:

1. Does the Learning Organisation as described exist either as a naturally occurring (albeit intermittent) state; and,
2. Assuming that it does, to what degree can the organisation's actions bring it about?

The sheer volume of material and the enthusiasm expressed around the Learning Organisation concept argue a strong case for the existence of something – but what exactly? It has been established that the defining characteristics of the Learning Organisation are hard to pin down for a number of reasons. Since versatility is a universally accepted core feature of such states, Flood's (1998) assertion that they cannot be defined in terms of particular structure, set of characteristics or skills, or practice is hard to contest. Lähteenmäki *et al.* (2001) consider common features of the various Learning Organisation models and provide the following summary list:

- People take responsibility for their own development;
- The leadership is an adaptive, guiding force;
- The employees are empowered.

It is interesting to note that learning is not directly referenced (other than by association with “development”) and that attitude and interaction are more the focus. What unites the various visions of the Learning Organisation is not the elements that it or may not comprise but the collective ethos and attitude to mutual and organisational development that emerges. Essentially, if the concept relates to social behaviour, norms and principles, it can be considered a question of organisational culture (Van Maanen and Schein, 1979).

Learning culture is a phrase that appears frequently throughout the literature, although not explicitly as analogous the Learning Organisation itself. Lipshitz *et al.* (2002) propose five norms likely to bring about learning commitment (transparency, integrity, issue orientation, inquiry and accountability) as the “cultural facet of organisational learning”. Huysman (2000) considers a “good Learning Organisation” to be one in which the conditions (culture) is such that new ideas will be embraced rather than frustrated. Borzsony and Hunter (1996) describe organisational adoption of learning and empowerment as “a major change of culture”. Carrim and Basson (2013) recommend that managers provide “an enabling learning culture” through practices, policies and procedures.

A certain state of cohesion and effectiveness, featuring an inclination towards flexibility and improvement, has reportedly been observed by various practitioners of management theory and dubbed “The Learning Organisation”. (Certainly, it is impossible to prove that no such state exists.) Would these practitioners concede that what had been observed could equally be described as (and as no more than) a good or enabling learning culture? Senge’s (1990) disciplines, for example, can be expressed as cultural (behavioural and social) characteristics; sharing vision, communication via mental models, a propensity for team learning and personal mastery, and most importantly, systems thinking as a shared disposition rather than an activity.

The learning culture of an organisation can be considered a subset of the overall culture of the organisation. Because it is descriptive of a general attitude towards learning it is fundamentally mutable and may be dependent on many factors both inside and outside the control of the organisation. The Learning Organisation concept represents the apex condition, or at least a high threshold, of the learning culture to the point where it may become the central pillar of the overall organisational culture. Returning then to the second question: if it is accepted that it can exist, can this apex or threshold condition be created artificially (Dibella and Nevis' "normative" perspective) or does it only occur "in the wild", and capriciously (developmental)?

It is certainly the case that many interventions designed to develop a Learning Organisation are heralded as successful (of the case studies examined in Section 2.4, all were successes, wholly or mostly). This success is problematic to measure objectively however, and often the measured indicators of success are the same facets focused on for development in the intervention (e.g. Carrim and Basson, 2013). This is disingenuous, and analogous to proving that a plane can fly by checking that the wings are attached. A seemingly unsuccessful intervention (e.g. Kiedrowski, 2006) can be dismissed as mis-application rather than a demonstration of failure.

Can culture be developed in a lasting way? Smith (1999) quotes and endorses Drucker (1992): *"if you have to change habits, don't change culture, change habits..."*. A parallel is drawn from OGCom's parent industry where a strong safety culture is ubiquitously championed. This parallel is not without precedent; for example, an extensive comparison of the two cultures (learning and safety) is submitted by Littlejohn *et al.* (2015), albeit with the aim of showing a correlation between the two. As shown in Section 2.2, Duffield and Whitty (2014) propose an adaptation of the safety "swiss cheese model" to illustrate the organisational learning process (or barriers/enablers to it). "Culture" and "climate" are terms related in learning literature (Carrim and Basson, 2013) just as they are in safety literature (Guldenmund, 2000).

The lessons that can be learnt from the safety industry in developing culture are telling. Despite its longevity as a focus of practice, there is still limited consensus on the definition and specific components of effective safety culture (Edwards *et al.*, 2013). The challenge, however, that is accepted as central to the development of safety culture is that the efforts that the organisation takes to show leadership commitment end up obscuring the principle that they are trying to encode (e.g. Bonometti, 2012; Bye *et al.*, 2016)²¹. In other words, it is necessary to make safety a focus every day without letting it become everyday. Despite the keen focus on safety culture within the offshore oil and gas industry (Kongsvik *et al.*, 2016), it remains characterised by disastrous safety lapses of a scale large enough to become household names (e.g. Piper Alpha, Exxon Valdez, BP Macondo). At each successive event, health and safety legislation is tightened and diligence increases, only to relax gradually over time.

This certainly rings true in the learning context. The systems that initially create flexibility may in time beget inflexibility, as lessons hard-learned from experience become deep-rooted and incontestable. Making gains in certain competencies may disincentivise experimentation with others (Levitt and March, 1988). Leonard-Barton (1992) postulated “core rigidities” that arise from the development, proliferation and entrenchment of an organisation’s core competencies. March (1991) identifies a tendency of organisations to prioritise exploitation of established solutions over the exploration of new ones. Starbuck (2017) warns that overzealous adherence to learnt “rules” can result in environmental changes being missed or underestimated, leaving the organisation ill-equipped and behind the pace of change.

The challenge of maintaining a culture that does not sour is linked to the question of whether the Learning Organisation remains a fresh source of inspiration; as discussed in the following section.

²¹ McHugh *et al.* (1998) attest to a similar dynamic within learning.

2.3.3. Concept Longevity

Seddon and O'Donovan (2010) raise the question of why the Learning Organisation proposed by Senge and embraced by others has demonstrably not become the norm in our organisations. They conclude that the prevailing 'command and control' management assumptions and mindset are antithetical to Learning Organisation development and that the solution is the application of double-loop learning (i.e. questioning underlying thinking and behaviour when addressing each learning opportunity rather than just adjusting the process in question). 'Command and control' is a phrase coined by Seddon and Caulkin (2007) and refers to "*regulation by management... ...where decision-making is distant from the work and based on abstracted measures, budgets and plans.*"

Seddon and O'Donovan (2010) stop short of providing any evidence or direct observation regarding the alleged failure of Learning Organisations to proliferate, but the conclusion is not an uncommon one. Garvin *et al.* (2008) agree with the sentiment and attribute the perceived issue to a lack of management understanding as to the precise steps to follow, and of tools for measuring progress and impact. Smith (1999) suggests that the lack of progress results from "wishful thinking" in methods for development and/or a systemic inertia pulling for the *status quo*. Coopey (1995) argues that the concept is fundamentally flawed in execution, on the grounds that it does not accommodate the inevitable political activities that will tend to undermine learning aims; that in practice employee empowerment will tend to be more modest than the Learning Organisation requires; and that the terminology surrounding the concept is ideal fodder for management ideology, leading to inevitable subversion of the intentions/actions of members to further the dominant party's interests.

Pedler and Burgoyne (2017) question whether the concept remains relevant, given its age and the emergence of other, more "current" ideas within the same literary channels. They argue that it does, on the basis of subjective views submitted by a

range of practitioners and theorists (selected opportunistically) although opinion gathered appears to be evenly divided. To some, it seems, the idea pervades in the guise of other related trends in organisational science; this is one of several themes identified for further research. Ultimately this effort adds to the overall impression that the concept has not yielded the fruit that was anticipated thirty years ago; after all, the relevance of something delivering widely perceived value would surely not be questioned in this way.

Grievs (2008) builds a (deliberately provocative) case that the very concept of the Learning Organisation should be abandoned, arguing that, as an ideal it is unworkable and unachievable “...*precisely because it is constructed as a social fact.*” Moreover;

“...it is weak in demonstrating the type of knowledge it seeks to pursue and it is unable to provide rules for its discourse which should clarify what type of problems it seeks to explore in the organizational world and what type of methodology it requires for doing so” (Grievs, 2008).

Even if there were a framework for the measurement and development of the Learning Organisation, he argues, its existence would defy the progressive and adaptive principles at the heart of the concept. In other words, it cannot be defined or pinned down because pinning down is not what Learning Organisations would do. This is a fair argument but it negates any value that the concept might have as a source of inspiration.

Kiedrowski (2006) assesses the impact of a “Senge intervention” within a case study context and attributes the lukewarm outcome to (amongst other things) a lack of practicality in Senge’s theory in general. Explanations for the non-proliferation of Learning Organisations that blame a lack or incompleteness of strategies are focusing on the “tool” rather than the “workman”. There is no shortage of strategies for the development of a Learning Organisation and the majority of “guides” (e.g. Senge *et al.*, 1995; Thurbin, 1994; Garvin, 2000) acknowledge that they must be tailored to the individual organisation. If there is a problem with implementing these approaches, it

may be the case that they are not sufficiently prescriptive to be embraced. In other words, only a Learning Organisation will have the necessary openness, systemic disposition and open-mindedness to follow the process of becoming a Learning Organisation; at least from a guide. To paraphrase McHugh *et al.* (1998): the people involved in the learning process must transform the organisation, not *vice versa*. This may be a fundamental “Catch 22”.

Flood (1998) points out that defining a structure or requisite characteristics of a Learning Organisation as an embodiment of systems thinking fundamentally contradicts systems principles; i.e. it should be structured in whatever way most holistically suits the organisation (even if this means a traditional hierarchy). It also seems that the Learning Organisation may come to lose its status; Boyle (2002), for example, describes how Royal Dutch Shell performed poorly in the 1990's despite being a quintessential and widely acknowledged “success story”. If an organisation cannot manage to remain a Learning Organisation, this suggests either that there is a certain uncontrolled and providential aspect which must also be present for it to emerge (e.g. an industry upturn), or that an organisation may need to evolve in structure or character in order to respond to uncontrolled aspects.

If the Learning Organisation needs to be evolutionary and therefore free of any particular design, either structural or in character, this does not undermine the concept itself necessarily; it means only that those theorists who overlook this required fluidity are wide of the mark. If adaptiveness to change is important above all else, however, it becomes difficult to imagine what kind of guidance can be offered to an organisation seeking to become a Learning Organisation. It becomes easier to understand though why the associated literature is often perceived as descriptive and aspirational. Perhaps it is the case that the concept is one that defies sequential instruction; i.e. the Learning Organisation exists (from time to time) but cannot be created.

Despite challenges to its achievability and relevance (Coopey, 1995; Grieves, 2008;

Seddon and O'Donovan, 2010; Pedler and Burgoyne, 2017) the Learning Organisation remains a pervasive concept that resonates through numerous other topics in organisational theory. Perhaps the noteworthy phenomenon is not the Learning Organisation idea itself but its popularity; why have so many joined the quest for such uncertain rewards over the last thirty years? This question is addressed at greater length in Section 2.3.4

2.3.4. Summary and Conclusions

A number of significant areas of dissent have been examined in this section, and resolutions proposed which are carried forwards through the research described herein. The case for the distinctness of organisational learning and the Learning Organisation concepts is found to be strong, and multi-faceted. It is likely that theorists from both camps are motivated by the same interest in learning, but whereas the former camp concentrate on the learning in motion, the latter group focus on the organisational attributes that learning is expected to deliver.

Such attributes that characterise the Learning Organisation effectively define an ideal or threshold of learning culture; the set of norms, principles and values shared by the organisation that relate to learning and improvement. This idea remains important despite its age (and re-imagining under other names) as it continues to inspire, although it is unclear whether in practice it is delivered more by intervention or by fortuitous alignment of circumstances; or perhaps both.

2.4. Value of Organisational Learning

This section considers the business case for development of learning capacity²² in an organisation. It is concluded that though the rewards are intuitive, in practice they are uncertain and whilst many advantageous correlations are claimed, few if any are reliably substantiated. Moreover, the longevity of any changes achieved is unproven. Ultimately it is difficult to construct a robust business case for investment in learning; the appeal of the Learning Organisation relies not on its demonstrated returns but on its power and persuasiveness as a concept.

“In the long run,” claims Senge (2006), “the only sustainable competitive advantage is your organization's ability to learn faster than the competition.” Like many assertions connecting learning and business success, it is qualitative and difficult to substantiate. It is also hard to discern what level of investment will achieve a significant difference in learning capacity, and the degree to which it will outperform other investment options. It is therefore pertinent (both now and 30 years ago) to ask whether the development of learning capacity is a value-adding or economically sound exercise. This section therefore explores the question: what is the business case for the Learning Organisation? Despite the reams of published material on the Learning Organisation topic, this is a difficult question to answer definitively.

The Association for Project Management (APM) lists the following as the typical components of a business case²³:

1. Strategic case: the background to the proposed action/why it is needed.
2. Options appraisal: other possible solutions considered (including no action).

²² The conclusions of the previous section (Section 2.3) notwithstanding, for the purposes of the questions discussed in this section studies on organisational learning and the Learning Organisation are considered as jointly contributory to the cause of furthering learning capacity.

²³ APM, <https://www.apm.org.uk/body-of-knowledge/delivery/integrative-management/business-case/>, accessed 21st July 2017

3. Expected benefits: benefits sought and unavoidable disbenefits.
4. Commercial aspects: the costs, funding arrangements and expected returns.
5. Risk: the major risks and associated impact on the business case.
6. Timescales: a schedule for the delivery of outputs and realisation of benefits.

These aspects are considered in turn for a hypothetical plan to develop learning systems and/or capacity.

Where applicable and to allow semi-quantitative analysis, trends from a sample of case studies are considered. It is unworkable to attempt to consider all case studies, reported as they may be via a wide range of media and in differing levels of details, or not at all. Instead, a representative dataset is drawn from the comparable case studies published in “The Learning Organisation” journal²⁴. It is reasonable to assume that the sum of case studies reported in a single leading publication on this theoretical discipline gives a fair approximation of the wider field. There is, in fact, a precedent for conducting quantitative, representative analysis based on articles submitted to this same journal (Tuggle, 2016).

Articles submitted in the journal are self-classified as a member of one of seven groups including those denoted case studies. At the time of writing there had been some 56 case studies published in the journal since its inception in 1994. A further 16 were added that on inspection described a case study in learning development despite being otherwise classified, making a dataset of 72. A number were then dismissed from the group on the grounds that, rather than being a case study in the development of learning capacity, they were instead:

- Case studies based on individuals undergoing learning rather than organisations (e.g. Howell, 1994);

²⁴ Published by Emerald Group

- Case studies documenting evidence of trends within industry (e.g. Winfield and Kerrin, 1994);
- Case studies used to contextualise exploration of a different topic (e.g. Richardson, 1995);
- Case studies concerning non-intentional learning development (e.g. DeFilippo, 1996);
- Case studies describing or validating the characteristics of an identified learning organisation (e.g. Harung, 1996);
- Papers reporting on generalisations from multiple case studies (e.g. Field, 1997).

The final tally was 25 studies²⁵ describing 27 case studies of an attempt to create or enhance collective learning capacity, distributed temporally as shown in Figure 2.23.

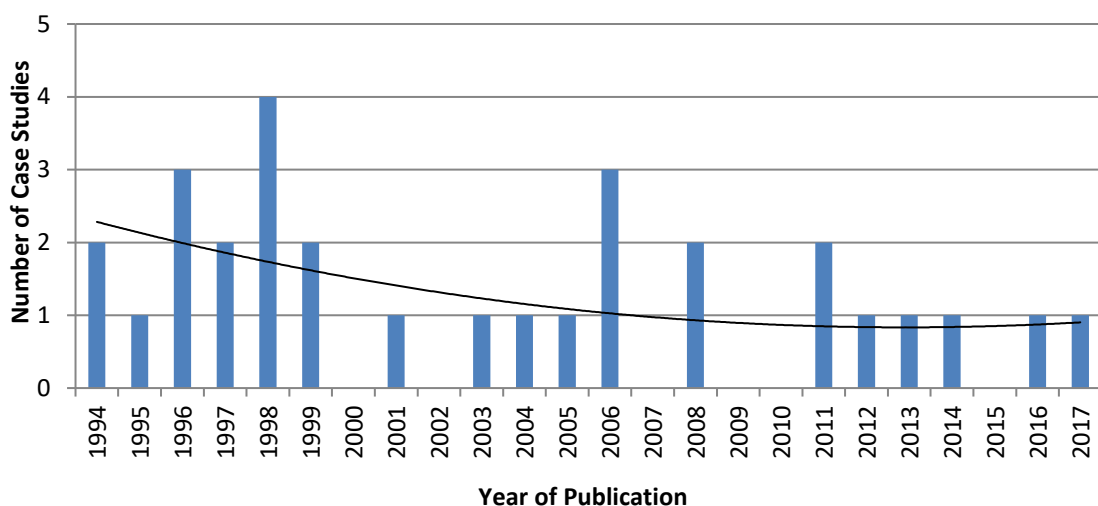


Figure 2.23 Temporal Distribution of Case Study Sample Group

It can be seen that the concentration of case studies is denser in the decade following the inception of the journal; as perhaps would be expected given the relative infancy of the concept. Popular subjects of study within the group are retail, manufacturing and

²⁵ Allee and Taug (2006); Austin and Harkins (2008); Bilston and Sohal (1995); Borzsony and Hunter (1996); Bushardt *et al.* (1994); Cicmil (1997); Clanon (1999); Corbett and Kenny (2001); De Loo (2006); Dovey and White (2005); Fraser and Novak (1998); Guastavi and Oxtoby (1998); Kiedrowski (2006); Lacoste and Dekker (2016); Levy and Brady (1996); Reeves (1996); Roth (2004); Smith (1999); Steiner (1998); Swift and Hwang (2008); Van Eijnatten *et al.* (2003); Wilson and Beard (2014); Wong (1994); Woods *et al.* (1998); Wreme and Sorrenti (1997).

educational organisations; governmental agencies or offices and banking firms are also well represented. Sizes of memberships (where reported) range from 18 to over 70,000, with the majority falling between 20 and 2,000.

2.4.1. Strategic case

The “strategic case” in the business case context is the background to the project and why it is desirable or needed. Judging by the literature alone, it would seem that the justification is the very survival of the organisation in question, or even organisations in general. The world is changing rapidly; *“it is a time of dramatically conflicting forces”* (Senge, 2006); *“we have entered a new era in the evolution of organizational life...”* (Shani and Docherty, 2003); and consequently *“for leaders and managers facing unprecedented and unpredictable change, the Learning Organisation has become an urgent quest”* (Pedler and Aspinwall, 1998). Carrim and Basson (2013) express this sentiment as *“learn or be extinct”*.

Cahill (1997) describes the question of why we should develop Learning Organisations as an important and seldom-asked question, of the type that *“...we rather expect that everyone would know the answer to...”* In the same paper, he concludes that the two strongest drivers for such an exercise are the possibility of promoting greater innovativeness, and to encourage the organisation in question to be more perceptive and responsive to the requirements of its customers. Drivers for developing learning capacity offered by Senge *et al.* (1995) are elective and strategic rather than the result of an arrival at some developmental milestone (improved performance, quality or customer satisfaction); for internal efficiency (“energised” work force, better change management); for competitive advantage. Thurbin (1994) concurs but acknowledges also that such a move may be precipitated by a specific problem faced by the organisation or a desired change of direction.

Three high-level options emerge: firstly, that learning is something that needs to be

done at this particular time in history because of an impending shift in the working of organisations/their operating context; secondly, that learning is something beneficial in general and companies that fail to embrace it will find it increasingly hard to compete; and thirdly that learning can be developed as a means of overcoming a specific obstacle. Generally, theorists of both organisational learning and the Learning Organisation align with the first and second perspectives without committing fully to either. The third option is acknowledged but rarely (if ever) advocated. It is, however, this third possibility that appears to motivate the majority of the case study group.

Of the case studies, over half (19) of the organisations under study were described as being in some sort of state of change or flux at the time the intervention plan was formed and implemented. Most commonly, this was a phase of expansion or rapid expansion (8) in some cases associated with deregulation or diversification of the organisation. Restructuring was another common condition, typically as a result of a merger or takeover process. Others were more vague, citing “uncertainty and unrest”, some kind of competitive conflict or decline in sales, or a drive for organisational “improvement”. The remaining eight case studies omitted to comment on the conditions that led to the learning intervention.

This suggests that in practice, learning interventions are not generally commissioned as part of a strategic move to safeguard a successful company’s competitive advantage, but instead they are a response to some sort of perceived shortcoming or challenge. It can be surmised from the instances in which the case study organisations elected to invest in organisational learning that it is regarded as a solution to complexity and disorder; learning is a panacea that can calm all troubled conditions. It is possible that it is seen as a step in the right direction from which good things must follow, or something that the problem will not be solved without, rather than something that will answer the challenge at hand. Certainly (as described in Section 1.2.1) at OGCom it was chosen as a focus for study/research to deliver broad benefit and *hopefully*

specific benefit; whether this is typical of the case studies can only be speculated upon.

2.4.2. Options appraisal

The “options appraisal” proposes and evaluates possible solutions to the problem framed in the strategic case and identifies the optimum path. The APM Body of Knowledge advises that this should include the “do nothing” option; i.e. it should consider the benefit of following a chosen path in relation to the likely outcomes of following the existing trajectory. The case study group does not offer any guidance in this regard, since none include an appraisal or listing of other options considered as alternatives to the intervention described. Neither is comparison of learning with other options common in the relevant literature.

Potential alternative options will depend on the problem that the organisation is trying to solve. As discussed in the previous section, this might be (according to theorists), the general problem of how to improve performance, to improve efficiency or to gain competitive advantage. Ideas proposed to deliver such (overlapping) ends are too numerous to list, but they include investment in training/re-training; diversification of products, services or customer groups; expansion or re-structuring of operations; marketing and/or advertising; business development and networking; new computer hardware, software or capabilities; automation technology; merger or acquisition; new plant or equipment; and engagement of management consultants. In short, there are a wealth of strategies with which development of learning capacity must compete in order to be selected as the optimum route to improved business performance.

Alternatively, as observed in many of the case study group, the organisation may be trying to deal with some form of perceived complexity. Gorzeń-Mitka and Okręglička (2015) provide a concise summary of Strategies for managing complexity that in turn builds on the analysis of Grussenmeyer and Blecker (2013); an abridged and simplified version of which is reproduced in Table 2.4. Again, it can be seen that options abound.

It is interesting to note that learning is not identified as a strategy for complexity management by either set of authors.

Table 2.4 Strategies for Managing Complexity (Gorzeń-Mitka and Okręglička, 2015)

Aim	Strategy	Description
Avoiding complexity	Smart Complexity	Distinguish between desirable complexity (driving consumer buying decisions) and undesirable complexity (unduly complicated internal processes)
	Keep it Simple - Lean	Twin aims of simplification and reconfiguration.
	Six Sigma	Routine measurement of complexity; continuous improvement approach to reduction. Modularisation is a key theme.
Reducing Complexity	Group decisions	Decentralization of decisions to operative groups to relieve the top management.
	Centralisation	Concentration on fewer suppliers or distributors.
	Complexity Reduction Framework - Standardisation	Standardisation of products, data transfer, business processes are standardized (industry wide).
Transfer of Division Complexity	Concentration on core competencies	Concentration on core products and processes; outsourcing
	Activities sharing, neural structure, cell design	Simplification of structure, products, processes, and behaviours.

The APM Body of Knowledge reminds the business case author to consider the proposed activities in relation to the base case of taking no action in relation to the problem condition. The consequences of inactivity again depend on the nature of the problem to which learning is the solution tabled.

If the Pedler and Aspinwall's (1998) argument is accepted that organisational learning is an urgent quest, then inactivity must lead inevitably towards partial or total failure of the organisation. If the problem condition is merely a less-than-ideal state of efficiency however, then the prognosis is far less catastrophic and may be limited to a gradual decline in market share (for commercial organisations), profitability or membership perhaps. Where the problem is complexity, the perpetuation of the *status quo* means

continued confusion, inertia, discord and perhaps consequential loss of direction, business or staff. This wide and subjective range of possible outcomes promotes the conclusion that an investment in learning would bring some alleviation but inhibits evaluation of how much.

2.4.3. Expected benefits

The expected benefits (and disbenefits) of the project are, along with the expected cost, the core of the business case. The challenge of demonstrating actual value arising from organisational learning has long been acknowledged (Miner and Mezias, 1996). As previously observed, often the assumption that value is delivered is taken as a given (Cahill, 1997; Starbuck, 2017). Alternatively, benefits are claimed on the basis of subjective assessment or anecdote or reminiscence (e.g. Garratt, 1999).

One reason why a consequential benefit is hard to demonstrate is that the intervention applied (to create or develop learning capacity) is highly variable. Since the process must to some degree depend on characteristics of the organisation under study, and since the characteristics of that organisation may also influence the outcome, causality and uniformity of response are elusive quantities (Friedman *et al.*, 2005). Even rarer, as Starbuck (2017) notes, are studies that investigate the frequency or consistency with which proven benefits are delivered. It is interesting to note that interventions in all of the case studies from the sample group were declared at least partially successful.

Campbell and Armstrong (2013), acknowledging their study as one of only a few longitudinal empirical studies in learning development, evidence a correlation between learning and shared understanding by examining the development of individual and shared mental models at two points in time (and for four different case study companies). They do not, however, attempt to show any correlation between this development and any demonstrable benefit to the companies, either in terms of

member experience or commercial value. Shared understanding may be another intuitively beneficial aspect of organisational culture but without a causal link to business performance it is an inadequate platform on which to build a business case.

Islam *et al.* (2013) demonstrate a cross-sectional correlation between learning (measured via leader-member exchange, organisational learning culture and organizational commitment; self-reported) and disinclination to leave the organisation. A later study homed in on psychological empowerment and organisational learning culture as indicators of “citizenship behaviour” and job satisfaction (Islam *et al.*, 2016). Dórdio Dimas *et al.* (2015) correlate the degree to which learning beliefs are shared and team support for learning with (self-reported) member satisfaction in a cross-industry, multi-level study. Member satisfaction is again an outcome the desirability of which few would question, but again it is an indirect benefit to the business unless it can be linked to a quantifiable value.

Battor and Battour (2013) undertake a rare venture to link learning and performance; concluding that there is a positive correlation mediated by customer relationship management (CRM). A group of 180 companies (of 1,000 approached) with 50 or more members drawn from random industries participated. However, all three variables are measured by the CEOs²⁶ of; such an approach is prone to criticism on the grounds of subjectivity and bias. A comparable study with similar self-assessed measures conducted by Song *et al.* (2014) purports to show that learning influences employee engagement and (indirectly) team performance.

Hernaus *et al.* (2008) and Zhou *et al.* (2015) come closest to achieving objectivity of outcome, using as they do measures of financial performance derived from listed company accounts. The former study gathered a wide-ranging, cross-industry dataset with over 200 participating companies (around 10% of those approached) drawn

²⁶ That is to say; the questionnaires were distributed to CEOs only.

randomly from a register of Croatian companies with over 50 members. Learning dimensions were self-assessed by a member of management (of differing levels); outcome variables were strictly financial (objective), and self-assessed measures of supplier relationships, customer relationships and employee satisfaction. Overall a correlation between organisational learning (dimensions) and organisational performance is claimed.

Zhou *et al.* (2015) perform a similar exercise with close to 300 participating companies in China. Again, learning variables measured by senior management self-assessment, and an objective measure of financial performance was used. No single learning dimension emerges as an indicator by itself; it is a combination of different factors that collectively indicate higher performance. This portrays learning capacity as a syndromic condition with a flexible range of contributory symptoms. Since both studies are cross-sectional, they do not show an improvement in performance following intervention but it does suggest that firms with “better” learning characteristics perform better without evidencing causality.

Relative Benefits

Whereas the absolute value of organisational learning is difficult to establish reliably, another branch of theory concerns itself with the relative value of different types of learning. This division originates with the work of Argyris and Schön (1978) which draws a distinction between single and double-loop learning processes and resultant outcomes (see Section 2.2.1 for an introduction). This two-level construct is echoed widely in the literature under other labels (as observed by Tosey *et al.*, 2012): as lower and higher-level learning (Fiol and Lyles, 1985); incremental and radical learning (Miner and Mezias, 1996); and adaptive and generative learning (Senge, 1990).

Further, additional loops have been proposed²⁷ to extend the categorisation and theoretical range of possible learning consequences. An important reference point in this area is the system of “levels” of (individual) learning theorised by Bateson (1972). Bateson considers the types of responses that may be produced by a particular repeated sensory input and assigns the following hierarchy of definitions:

- “Zero Learning” or “Learning 0” is where negligible change occurs; possibly because the causal links under study are unaffected by the input, but possibly also because of habituation to the input or because the associated change process is already complete.
- “Learning I” is where changes in Zero Learning occur; i.e. basic behaviour patterns are modified in commensurate response to the sensory input.
- “Learning II” or “Deutero-Learning” is a change in the process of Learning I; where the learning process itself is improved or modified in some way, or where the range of alternatives from which a behavioural option is chosen is expanded. This is also described as “learning to learn”.
- “Learning III” is, similarly, a change in the process of Learning II, or in the system of sets of alternatives available
- “Learning IV” (which Bateson acknowledges as unlikely to occur within adult organisms) would require a change in Learning III.

The scale is discontinued here, presumably because of the level of unlikeliness already considered by Bateson to have been met but could theoretically continue. It should be acknowledged that the author’s progression to even this level is to support detailed examination of the difference between levels I and II, and also that he speculates that even Learning III may be “...difficult and rare in human beings” (Bateson, 1972). Moreover, the basis for this hierarchy of levels is as a response in individuals to a

²⁷ Not by Argyris and Schön, however, who make no mention of “triple-loop learning” or beyond (Tosey *et al.* 2012).

repetitive and rudimentary, Pavlovian-type input rather than a complex organisational issue. The system nonetheless finds traction with a number of organisational learning authors who extrapolate Bateson's learning levels to suit their field.

As Tosey *et al.* (2012) neatly summarise, Hawkins (1991) and Isaacs (1993) for example acknowledge Argyris and Schön's double-loop learning and draw comparisons with Bateson's levels. Both authors suggest equivalence between single-loop learning and Learning I and between double-loop and Learning II (also Yuthas *et al.*, 2004); both dub Learning III "triple-loop learning". This third level "...permits insight into the nature of paradigm itself..." (Isaacs, 1993), and requires an ability/inclination to change the "...underlying premises and belief systems that form [Learning II] frameworks" (Hawkins, 1991). Swieringa and Wierdsma (1992) and later Flood and Romm (1996) make the same conceptual step into triple-loop learning but with differing (according to Flood and Romm) definitions²⁸. Similarly, Snell and Chak (1998) and Romme and van Witteloostuijn (1999) acknowledge Bateson but equate the triple-loop learning concept with that of deutero-learning, which for Bateson is only Learning II.

Tosey *et al.* (2012) summarise these different definitional stances into three groups: triple-loop learning as a change in the rate or process of "learning to learn" (as per Bateson's "Learning III"; 1972); triple-loop learning as deutero-learning; and triple-loop learning as (in some way) beyond double-loop learning (however defined). The first of these, rare as Bateson considers it for the individual, must be considered remote in the extreme as a possibility for the organisation. The second is a duplication or misinterpretation of Bateson's levels; it is clear that deutero-learning is described by Learning II according to his widely-referenced work. It is the third category ("transformative learning") with the greatest promise to hold ground as a concept that is distinct from double-loop learning.

²⁸ The three loops of learning profundity appear in other related contexts; as shifts in consciousness for Griffey (1998), and of profundity of impact on operations for Hawkins (1991).

The conclusion that is apparent throughout these works is that higher level learning is “better” learning (Tosey *et al.* 2012). Flood and Romm (1996), for example, state that “...*triple loop learners operate intelligently and responsibly*”, the implication being that the other types of learners do not. Romme and van Witteloostuijn (1999) submit that triple-loop learning increases “...*the fullness and deepness of learning...*”; Isaacs (1993) considers it capable of producing a “...*transformative and creative effect on [members] lives.*” Simonin (2017)²⁹, however, notes a near-absence of empirical research to substantiate the different loop (“N-loop”) learning levels or the promised rewards. Whilst it may be possible to provide examples representative of the benefits of each, it is a logical step too far to conclude any kind of hierarchy based on outcomes.

By way of counter-argument, Henderson (1997) challenges the superiority of double-loop learning over single on the grounds that enhancing an unreliable learning process will simply accumulate (for example) superstitious learning at a faster rate. This is a fair criticism; on what grounds can we assume that shifting paradigms will result in changes that are any more efficacious and insusceptible to unexpected emergent effects than single-loop learning? The more ambitious the change, the greater the investment, uncertainty and risk associated. Henderson later revisits this question and analyses the reliability of double-loop learning as a process from a Popperian perspective (i.e. in relation to Popper’s (1997) ontological “worlds”) and conclude it to be lacking (Blackman *et al.*, 2004).

Table 2.5 overleaf summarises a range of interpretations of single, double and triple (where applicable) loop learning from a variety of theorists.

²⁹ A study undertaken by Simonin (2017b) (answering his own earlier call for more empirical work on learning loops) compares learning outcomes, as perceived by “top executives”, with self-assessed expertise of the host company in different types of alliance (as a proxy for loop level) for major American firms. Whilst a correlation reportedly emerges between double-loop learning and collaborative know-how, Simonin cautions that this should not be read as an endorsement of intrinsic superiority over single-loop learning.

Table 2.5 Comparison of learning loop levels³⁰

Loop (/level)	Argyris and Schön	Fiol and Lyles	Miner and Mezias	Arthur and Aiman-Smith	Flood and Romm	Romme and van Witteloostuijn	Reynolds	McClory <i>et al.</i>
	1978	1985	1996	2001	1996	1999	2014	2017
Single	Adaptation of process in alignment with established assumptions and values	Low impact development of/adjustment to rudimentary patterns ("lower level")	"Routines that appear to produce useful outcomes are retained, while others are discarded" ("incremental")	Incremental change intended to perpetuate existing processes or technologies ("first order")	"Means-end thinking"; desired ends are determined and optimum means sought accordingly ("How?", "What?" or "Why?")	Consolidation of knowledge/competency base	Resulting from consideration of "Are we doing things right?"	Change in parameter
Double	Resolution of incompatible organisational norms by restructuring norms, strategies or assumptions	Change to over-arching norms and cognitive frameworks ("higher level")	Modification of norms, policy or objectives as a response to identified issue ("radical")	Breaking out of habitual practice or approach by exploration of different modes of thought ("second order")	Reconciliation of "how-type" and "what-type" learning centres ("Are we doing things right?" and "Are we doing the right things?")	Change to knowledge/competency base by reframing problems and devising new mental maps	Resulting from consideration of "Are we doing the right things?"	Change in process and parameter
Triple					"Reflexive consciousness"; three learning centres interact in one overall awareness	Development of "overall learning infrastructure" and skills to use same	A change in being (rather than doing)	Change in targets and culture

³⁰ This summary is not submitted as comprehensive, but representative of the differing range of interpretations of the (supposedly) same concepts.

What this comparison illustrates is that:

- Classifications of two-level learning are fairly consistent, coherent and complementary.
- Classifications of three-level learning differ, in some cases dramatically, on their interpretation of triple-loop learning in particular.
- Some three-level systems describe an ultimate level that equates to some sort of collectively enlightened condition. Given Bateson's comments regarding the rarity of Level III learning in the individual, it can only be questioned whether this kind of condition has ever been maintained, or even achieved.
- Others appear to achieve a third level by equating it approximately with double-loop learning, and then shoe-horning a downgraded version of double-loop learning in between.

The question is perhaps not so much whether paradigm shifts can be conceived of or even evidenced (for examples claimed see Ameli and Kayes, 2011; Nordin *et al.*, 2017) but whether or not it is (a) practical and (b) desirable for such shifts to be catalysed as part of an organisational learning process. The issue of practicality encompasses not only the challenging of paradigms but also the capacity of the organisation to effect the changes suggested by such challenges. Are three levels genuinely required to describe the different types of learning outcome generally observed/observable, and does the distinction of a third level (beyond double-loop learning) serve any useful purpose? It certainly contributes little to the business case for learning.

Disbenefits

Disbenefits of the planned business change must be considered, but also kept distinct from risks (discussed in Section 2.4.5); the line between the two being drawn broadly between negative consequences that are expected, and those that are possible and may be mitigated. Actual expected negatives of learning are effectively zero, since

there are no clear reported trends. Such are the positive connotations of learning, it is hard to conceive of any clear downsides, as illustrated by Figure 2.24. This Causal Loop Diagram was developed in consultation with managers at OGCom for the purposes of gaining support for the proposed action research plan. The relationships shown are assumed rather than tested, but nevertheless they are intuitive and defensible and they make a case for organisational learning as self-reinforcing.

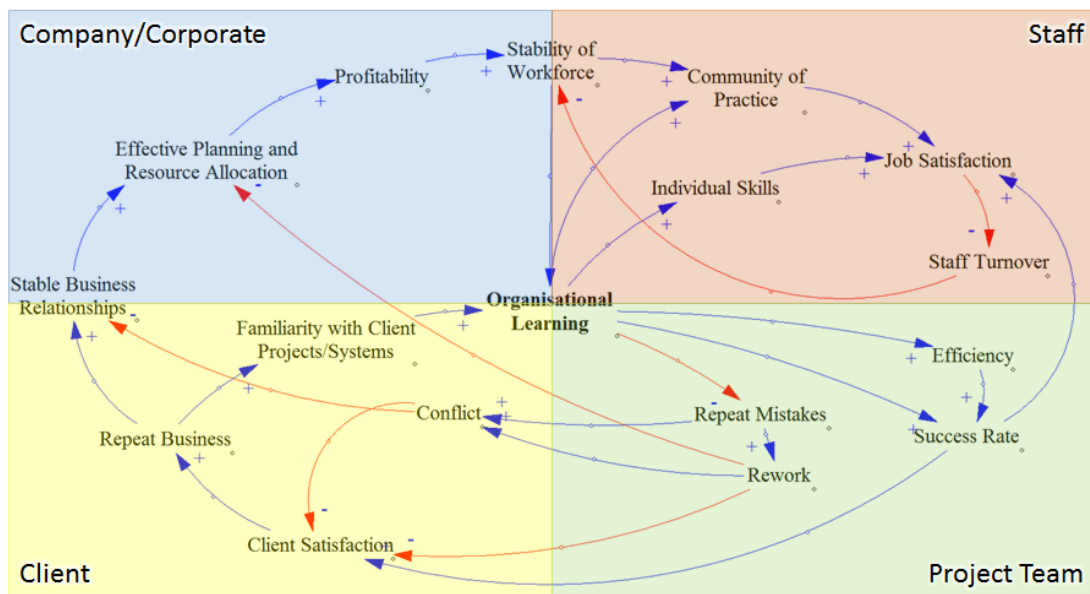


Figure 2.24 Causal Loop Diagram of Organisational Learning Benefits

The only significant challenge to the general benevolence of learning comes from those practitioners who find the Learning Organisation, once established, to be an idol with feet of clay. Newman and Newman (2015) question whether the supposed empowerment delivered by learning is a corporate buzzword without substance, or worse “...a smokescreen for managerial domination of less influential members of an organization...”. Marsick and Watkins (1999) warn that learning may become another “...tool in the organization's arsenal for getting more for less from their workforce”, and quote Garrick (1998) and Scheid (1997) as case studies demonstrating the use of a focus on learning as a means of exploitation or even excommunication. Armstrong (2000) goes further still and accuses the Learning Organisation concept of being “a pimp”; a means to stimulate productivity.

These comments do not describe a negative side-effect so much as a fundamental distrust of the achievability of the stated goal. Learning Organisation champions might well counter that in such instances the stated goal was misunderstood and mis-implemented rather than misconstrued.

2.4.4. Commercial aspects

What is the cost of an intervention designed to create or enhance learning capacity? The question necessitates examination of what such interventions actually involve. It has long been a criticism of Learning Organisation literature that it has focused on the end rather than the means. Alternatively, principles (such as Senge's pillars) are described at length rather than processes, and even those authors who acknowledge this shortcoming struggle to provide clear instructions. It would (as discussed in Section 2.3) be difficult to create a blueprint that could accommodate the huge variation in organisation sizes, structures, functionalities etc. If there is no universally-accepted path to learning, it makes sense to consider what happens in practice, and in the case study group in particular.

Reports of training exercises conducted for the case studies ranged from vague mentions of "training programmes" or "training in Learning Organisation values" to some elaborate and intensive arrangements. Bushardt *et al.* (1994), for example, describe an extensive programme of re-training which required the establishment and training of an internal, 12-strong training team. This team was then responsible for delivering a series of training sessions attended by approximately 500 employees. More committed still were the (core team of) employees who underwent an 18-month intensive programme (van Eijnatten *et al.*, 2003), and the company that established a corporate education centre and mandatory annual courses for all members (Wong, 1994). Another case study described closure of facilities whilst staff participated in training trips to Jordan (Roth, 2004), although what proportion of staff was not reported.

Team-building exercises and workshops were also popular; workshops in learning theory (Kiedrowski, 2006), role play workshops (Woods *et al.*, 1998), preparatory meetings (Lacoste and Dekker, 2016). Steiner (1998) reports on an intervention involving “self-managed flow groups” practising visualisation and communication techniques. Levy and Brady (2006) describe group “strategy sessions” and away-days for assimilation and alignment of members. The most extreme example came from Wong (1994), whose study of a Japanese conglomerate observed the maintenance of a company “religion” which all employees were required to “practise”.

Other intervention measures reported were restructuring or reorganisation of roles and members (e.g. van Eijnatten *et al.*, 2003); the empowerment of teams to actualise (approved) experimental initiatives (De Loo, 2006); the co-design and development of a brochure (Levy and Brady, 2006); and the establishment of a full-time redevelopment design team (Dovey and White, 2005). The common feature of all of these measures (with the possible exception of Roth’s widespread travel to Jordan) is that their cost is dominated by the time spent by organisational members. It can be deduced that developing learning capacity requires a significant commitment of human resources; resources that may effectively cost the business twice because they have to be diverted from profitable work.

Very few direct and quantified costs were reported in the case studies, most being descriptive accounts of “considerable sums” (Reeves, 1996) or “significant” indirect costs (Bushardt *et al.*, 1994). A figure of £1 million funding, “matched by the university”, is reported by Borzsony and Hunter (1996), although this is made available for a programme of “learning by partnership” and establishment of supportive learning networks. Cost or commitment can otherwise be inferred from the size of the organisations and the level of utilisation required for the interventions described (as discussed previously), or from the reported duration of the programmes. Again, these ranged from descriptive figures (“lengthy initiatives”; De Loo, 2006) to approximate

durations of two, three, four years (e.g. van Eijnatten *et al.*, 2003; Austin and Harkins, 2008), up to as many as seven years (Swift and Hwang, 2008).

2.4.5. Risk

The first risk of any business case is that it may fail to deliver the expected benefits; this is certainly a possibility in the case for learning. As noted in Section 2.4.3, some authors (e.g. Marsick and Watkins, 1999; Armstrong, 2000) doubt that the end once realised will truly reflect the vision of learning that motivated the change. Blackman and Henderson (2005) observe that too much focus on establishing processes and systems at the expense of putting the learning to effective use undermines the effort towards transformational change and thus waters down the end condition that might otherwise have been achieved. Williams' (2007) study provides evidence that engagement with learning systems in those companies in which they are established may be low (11.7% in the study in question).

There is also no guarantee that the established learning process will necessarily result in learning actions that are beneficial to the organisation. As Levitt and March (1988) observe: "*Learning does not always lead to intelligent behaviour. The same processes that yield experiential wisdom produce superstitious learning, competency traps, and erroneous inferences.*" Enhancing learning capacity requires the organisation to become more flexible and experiment with new ideas. Not all of these ideas will turn out well; learning thus effectively provides a quicker route to counterproductivity or failure.

There is a risk too that the systems that initially create flexibility will in time beget inflexibility, as lessons learnt from experience become deep-rooted and incontestable. Making gains in certain competencies may disincentivise experimentation with others (Levitt and March, 1988). Leonard-Barton (1992) postulated "core rigidities" that arise from the development, proliferation and entrenchment of an organisation's core

competencies. March (1991) identifies a tendency of organisations to prioritise exploitation of established solutions or business streams over the exploration of new ones. Starbuck (2017) warns that overzealous adherence to learnt “rules” can result in environmental changes being missed or underestimated, leaving the organisation ill-equipped and behind the pace of change.

A related negative outcome that was noted in some of the case studies was encountering resistance to change and resulting tension or conflict (e.g. Bilston and Sohal, 1995; Cicmil, 1997; Woods *et al.*, 1998). Field (1997) suggests that this resistance may arise where members do not wish to take on greater accountability and thus, potentially, blame. In one case study (Lacoste and Dekker, 2016) some resignations were noted within the period under study and impliedly as a result of changes introduced, suggesting tension that became irreconcilable. Overall few negative effects were recorded in the case study group, although this may be because those that turned out poorly or unexpectedly were less likely to be reported on.

2.4.6. Timescales

A business plan cannot be evaluated without some idea of how long a commitment is required, and in what timeframe the anticipated benefits are expected to be delivered. Specific schedules are rarely offered, and reasonably so, on the grounds that the characteristics and context of the organisation in question will greatly vary the duration of the exercise. An exception is provided by Thurbin (1994), who proposes a “17-Day Programme” to be undertaken at a rate of one day per week over a four-month period. Buckler’s (1998) programme of workshops are to be “...*spaced in time to ensure that sufficient depth of understanding is achieved before moving on.*” Durations for Senge *et al.* (1995) are elusively linked to “...*the gestation period of the learning*”.

As was noted in Section 2.4.4, delivery timeframes observed in the case study group (or those for which it was reported) were measured in years; from two to seven. It

should be noted that this milestone does not mark a cessation of efforts; maintaining the learning focus is an ongoing activity.

2.4.7. Summary and Conclusions

Discussion of the various aspects that contribute to a business case has singularly failed to create a robust argument for investment in learning capacity. More specifically it has been found that:

- The driver for learning is not (as theorised) improvement in general performance; in practice it is most commonly seen as a solution to a state of complexity.
- Alternative options to achieve the same desired outcome are either not considered or not reported.
- The benefits to the organisation of learning are far from certain. There is a strong consensus that there will be positive effects but they are unquantifiable.
- The cost of developing learning capacity will be counted in man-hours of effort from a significant proportion of the organisation, and for a sustained period.
- The main risks of investing in learning is that the resultant effects will be subtle, meet resistance or prove short-lived.
- Benefits may take some years to be realised.

Overall, it is hard to believe that many would be won over by such uncertain and hesitant arguments. However, the relative abundance of case studies (both in the group reviewed and otherwise) suggest that even a thin case of this nature is persuasive. It is conceivable that, where the problem situation is complex and seemingly insoluble, it becomes easier to accept any solution that might offer relief; especially where few alternatives are known. It is concluded that the business case for organisational learning defies practical assessment because both learning process and value depend heavily on the nature of the organisation, as well as factors such as (for example) duration over which value is estimated.

2.5. Research Opportunities

The most often-noted gap in both organisational learning and Learning Organisation research is the paucity of empirical evidence (e.g. Tosey *et al.*, 2012; Campbell, and Armstrong, 2013; Simonin, 2017). This type of evidence is problematic to achieve however. The massive variability of organisations in terms of (e.g.) size, turnover, history, and operating industry makes any kind of an objective comparison of learning capability, impact on effectiveness or quantifiable benefit all but impossible. A number of authors (e.g. Dibella and Nevis, 1998; Small and Irvine, 2006; Argote and Miron-Spektor, 2011) have developed frameworks for the assessment of capability in/orientation towards learning but these are typically intended to identify strengths and weaknesses rather than draw comparison. Studies therefore are limited to measurement of outcomes via member assessment (e.g. Lähteenmäki *et al.*, 2001; Du Plessis *et al.*, 1999; Herstein, 2011), which can hardly be considered disinterested. Greater internal validity may be achieved by observing processes of change within an organisation or multiple organisations; albeit at the expense of generalisability.

With this in mind, the following opportunities for study are discerned from the existing, and in particular recent, literature:

1. The Kolb-esque pattern is widely endorsed as a model for organisational learning. With such (rare) consensus in the literature, it might be expected that evidence would abound for the beneficial (or otherwise) effects of aligning practice to entrench this cycle, yet little exists. Case studies monitoring the change induced by implementing or enhancing this cycle could be used to (a) differentiate between the subtly different versions of the model, (b) identify any potential blockages or sources of resistance and (c) support the efficacy of the model empirically.
2. The value of employee participation in organisational change is widely acknowledged in Learning Organisation texts, but nevertheless the overwhelming

majority of case studies published describe 'top-down' intervention strategies which have been instigated by senior management. A 'bottom-up' approach to increasing organisational learning capacity/establishing a Learning Organisation is postulated, by introduction of simple mechanisms for increasing inter-project communication, and recording, sharing and implementing lessons observed, and then allowing the positive community dynamic that ensues to permeate and catalyse further change.

3. The relationship between the ideal Learning Organisation and organisational learning capacity/practice is unclear. It is important because it serves as a potential connection between two bodies of theory that may be anything from mutually exclusive to directly contradictory.
4. Whilst myriad models exist for organisational learning (and the Learning Organisation), they rarely allow for variation between industries/types of organisation. It is reasonable to suppose that the learning dynamics and in fact mechanisms of an organisation may be very different from those of another with a different size/structure/purpose. Studies that enhance the generalisability of existing theory or, more likely, make modifications to reflect the variability of practice could provide clarity in this regard.
5. Alignment with Kolb's ELT notwithstanding, a number of common fault lines exist within the organisational learning literature that undermine the emergence of a single unifying theory. Models typically focus on a particular aspect or theme, such as double-loop learning or overcoming defensive routines, without addressing (or reviewing) commonly identified gaps or criticisms. A model that aligns all threads in one model could highlight misconceptions and identify areas for further study.

These leads are all investigated, with differing levels of priority, in the two studies described in Chapter 3 (Methodology).

Part 2 – Groundwork

3. Methodology

This chapter describes the methodological background to the research and justifies the paradigms, designs and techniques selected to investigate the research questions identified. Phase 1 was an action research study selected as an approach that could be used to develop theory whilst delivering a beneficial outcome for the host Company (to satisfy the twin objectives of the EngD programme). Phase 2 (mixed methods) was designed to explore the themes that were emergent from Phase 1. The two research designs used are described in more detail, and principles are established for rigorous and valid delivery. Finally, the specific measures applied during the execution of the studies are explained.

The purpose of this research being ultimately to add to the collective knowledge, the efforts taken and described herein must be justified in relation to:

- The nature of the knowledge desired;
- The logical construct by which that knowledge can be delivered;
- The process which must be followed to consider the knowledge valid.

At the heart of the first of these lies an ontological matter: what, in fact, exists to be known or discovered within the disciplines of social science? The latter pair are epistemological questions, in that they relate to the way in which things may be known or considered known. Philosophical schools in research and social science in particular are too numerous and nuanced to consider comprehensively herein. There are, however, a number that demand examination not least because they betray a paucity of consensus as to which are of greatest import to social science.

3.1. Philosophical Context

Ritchie *et al.* (2013) consider that there are two main philosophical stances relevant to the social sciences; realism and idealism. For the realist, an external reality exists that is independent from and indifferent to any beliefs or opinions held of it. In contrast, the idealist holds that reality is only knowable via the medium of human experience, and that outside of this interpretive context there is no absolute reality (Ritchie *et al.*, 2013).

Bernard (2010) considers social science to be rooted in empiricism, and holds that modern-day research generally follows either the positivistic tradition or humanistic. Empiricism and positivism are forms of realism in that they also assume an external, objective reality, but realism permits speculation about aspects of reality that have not been observed, whilst empiricists and positivists believe that only what can be measured can be known (Blaikie, 2007). The positivist assumes that the human behaviour is determined by laws that are like those that govern the physical sciences (Wallace, 1996). The empiricist, however, accepts any relationship found provided that the evidence is defensible by the standards of the method of delivery. Humanism, as the name suggests, champions the value and agency of human beings and considers truth not an absolute but a product of human judgement (Bernard, 2010).

Della Porta and Keating (2008) identify four (different) broad schools of thought as key philosophies for social scientists: positivism, post-positivism, interpretivism and humanism. ("Philosophy" is used as they question whether "paradigm" is even appropriate within social science, since the term implies a certain level of consensus which is absent). Interpretivism could perhaps be thought of as an intermediate stage between the objectivist philosophies and humanism. Like humanism, it considers knowledge as attainable only via human experience and interpretation, but the reality it assumes is an objective one from which the subjective cannot be separated, rather than strictly subjective (Saunders *et al.*, 2007).

Post-positivism, proponents of which consider as an advance from or critique of positivism, is also based in realism. Positivism is criticised for overlooking human experience as a source of understanding, and of overlooking context as an influence on praxis (Fox, 2008). This is resolved for post-positivists by the recognition that all observation is inherently fallible, and the consequential conclusion that any and all theory is subject to revision. Theories can therefore not be proven but they can be disproved and an objective truth approximated more closely by developing and re-developing theory.

The philosophies and paradigms discussed are summarised in Appendix A, along with the main ontological and epistemological stances relevant to each.

Bernard (2010) notes that within the social sciences, applicable philosophies vary with specific discipline and application, citing as an example the contrast between the positivistic approach typically taken to research in psychology and the more interpretivist nature of most clinical work. By extension, it may be instructive to consider the specific discipline and topic of the proposed study when identifying a suitable research paradigm.

Kim (2003) identifies positivism, interpretivism and critical theory as the prominent paradigms in organisational learning³¹ research and makes the case for adopting a positivist framework augmented with challenges as appropriate from the two other ideologies. The key benefit of positivism to Kim is the compatibility and acceptability it provides the wider scientific community. This advantage would certainly extend to the engineering context of the RE's host industry where positivism is ingrained.

In contrast, Yeo (2005) considers organisational learning from the realist and nominalist viewpoints only; as (reportedly) typical. The latter in this context is effectively

³¹ It is not beneficial to go further towards "source" and assess paradigms commonly applied to individual learning, since (a) they are many, varied and fairly context-specific (van Merriënboer and de Bruin, 2014), and (b) research methods applied will necessarily be aligned with organisational behaviour rather than individual.

synonymous with idealism since the distinction between the two schools of thought is principally the *order* of existential constructs (i.e. universals exist “before” objects or vice versa). Support for the nominalist approach is implicit in Yeo’s review, aligned as it is with the view of the organisation as an organic system, and with learning as a continuous, concurrent phenomenon rather than deliberate, structured activity.

Certainly, these perspectives seem to be representative of the wider body of research, in that researchers elect either to align with the objective (positivist) sciences (e.g. Kashif Imran *et al.*, 2016) or embrace the differences between the sciences and take an idealist or interpretivist stance (e.g. Birdthistle, 2008; Dovey, 2014; Cooper, 2014).

Further study-specific aspects that should be considered are the nature of the knowledge that is the goal of the research, and any limitations in the context in which it will be conducted. Scientific knowledge broadly comprises laws, in the form of reliably repeatable phenomena, and theories, which are propositions attempting to explain observations made (Bhattacharjee, 2012). These two types of intellectual artefact are linked by logic and evidence only; deductive research gathers evidence with which to demonstrate the universality of theories, and inductive research infers logical relationships between factors based on observations made (Bhattacharjee, 2012). The rules governing the validity of deductive research is effectively the scientific method, to satisfy which tests of replicability, precision, falsifiability and parsimony must be met.

Some social scientists hold that inference is both the only goal and the only source of validity within social science research (Della Porta and Keating, 2008). This presents a serious obstacle to positivism, which requires both deduction and induction to take place in order to progress scientific knowledge. Deductive reasoning is intrinsically challenging for most social science contexts since isolation of variables is rarely achievable. In the absence of such isolation, a conclusion of universality can only be achieved if a premise is tested in all possible contexts.

The research proposed intends to demonstrate that a particular organisational learning mechanism can be evidenced, and that within the context studied, it will lead to certain emergent effects. Such predictions would not satisfy the condition of falsifiability as hypotheses, in that no amount of unsuccessful studies would prove conclusively that such a demonstration was fundamentally impossible (and for this reason they are presented as “research questions”). A successful outcome, however, would provide observations from which understanding may be drawn, or theory induced.

It should be noted also that the industrial setting of the research (i.e. the host company) is effectively a single member of a population of organisations of a particular type, or of organisations in general. Observations made within this very specific setting have highly limited generalisability, but they may be used as a starting point for development of a generalised theory which can be tested in other organisational settings (each such setting providing a further observation rather than conclusive corroboration). Alternatively, observations may be used to challenge or modify existing theories.

The optimum paradigm for this research, considering disciplinary precedent and preference along with research aims and context, is post-positivism. The “given” with which the research must begin is that human learning exists, albeit as a (somewhat blurry) distinction drawn to subcategorise a certain type or types of human behaviour. This thesis does not challenge whether learning is as an objective and observable phenomenon; it builds upon this foundation to explore the degree to which an equivalent process can be discerned in the collective case. This position is facilitated by adopting an objectivist ontology.

However, the precise nature of organisational learning (as a review of the relevant literature shows) can be expected to be as elusive and varied as is individual learning. A post-positivist approach can acknowledge the diffractive nature of the phenomenon and human experience in general whilst taking logical, incremental steps to hone theory towards the observable aspects of the underlying reality.

3.2. Research Design

The Evidence for Policy and Practice Information and Co-ordinating Centre³² (EPPI-Centre) identifies the following study types by purpose/objective of research³³:

- Description
- Exploration of relationships
- Evaluation
- Development of Methodology
- Review

The key impression that emerges from the previous chapter is that the disciplinary field of organisational learning is a complex maze of similar yet contrasting ideas, as acknowledged by many of the authors referenced. Empirically-tested relationships are few, and consequently “knowledge” is limited. This context is fertile ground for exploratory research; conducted as they are where pre-existing knowledge is sparse and insufficient to support development of more targeted hypotheses. A number of different methods may be applied to advance an exploratory agenda, with the aims of assembling theories and identifying priorities for (later) targeted research.

Saunders *et al.* (2007) use “exploratory studies” as a category of research purpose, and in contrast to descriptive and explanatory studies. For them, exploratory studies will predominantly involve literary surveys, consultation with experts, and focus groups. In the wider literature however, the term “exploratory” is applied to a substantial range of methods, including factor analyses (e.g. Vandenberg and Williams, 1997), case studies (e.g. Peltokorpi, 2014) and meta-analyses (e.g. Goho and Blackman, 2006) to name but a few. The defining characteristic of exploratory research is not the method but the maturity of the research question and the aim of the study.

³² Part of UCL’s Department of Social Science.

³³ <http://eppi.ioe.ac.uk/>. Accessed 28th May 2018.

The selection of a suitable exploratory research design must consider the research paradigm and specific study objectives of course, but of equal importance as a set of constraints is the research setting/facilities available. The EngD programme was devised to allow REs to span both the academic and industrial contexts, and consequently the programme is designed such that the RE will spend “...*about 75 percent of their time working directly with a [single, host] company*³⁴”. Using such a setting to study an organisational phenomenon has certain advantages but these do not include access to isolated groups that can be objectively compared, as would be required for causal, experimental and also observational research designs.

Nyame-Asaimah and Patel (2009) reviewed methods typically utilised specifically in research into organisational learning (and the Learning Organisation, since they do not distinguish between the two) and identified case study (e.g. Hillon and Boje, 2017), action research (e.g. Duffield, 2016), factor analysis³⁵ (e.g. Dórdio Dimas *et al.*, 2015), simulation (e.g. Park *et al.*, 2015) and ethnography (e.g. Lee and Roth, 2007) as the prevalent research models. This list is certainly supported by an examination of the literature although it is expanded to include mixed methods research, the rise to prominence of which as a flexible and potentially insightful design has been relatively recent (Creswell and Plano Clark, 2011).

An overview and key facets of these types of design, based on the summary provided by the University of Southern California Library³⁶ and augmented using information from the authors referenced in this chapter, is provided in Table 3.1. They are discussed in turn in greater detail below.

³⁴ <https://www.epsrc.ac.uk/skills/students/coll/engdoctorate/>. Accessed 9th December 2017

³⁵ Which is in actuality more a computational analysis method than a research design. As such, it is omitted from the list covered in Table 3.1.

³⁶ <http://www.libguides.usc.edu/>. Accessed 2nd May 2017.

Table 3.1 Overview of Social Science Research Designs

Design	Nature	Good for	Limitations/Issues	Applicability
Action Research	Interventional strategy that is applied on the basis of an initial exploratory stance. Iterative cycles follow, each building on its predecessor, until an understanding is reached.	<ul style="list-style-type: none"> • Work/community situations • Solution-driven outcomes • Learning of practitioner • Changeable situations 	<ul style="list-style-type: none"> • Multiple roles of researcher • Control of researcher bias • Twin objectives (change and understanding) may conflict 	Applied – Phase 1
Case Study	In-depth investigation of a particular problem in a particular setting.	<ul style="list-style-type: none"> • Deep understanding possible • Flexible exploration • Can support theories or provide further insight 	<ul style="list-style-type: none"> • Little generalisability • Control of researcher bias • No cause and effect • Picture may be incomplete 	Does not generate direct benefit for host Company. Does not align well with subject of research unless study group has developed the desired behaviour
Ethnography	Researcher observes and interacts with group under study in order to characterise and understand particular dynamics	<ul style="list-style-type: none"> • Anthropological studies • Depth of understanding of problem gained • Can identify unexpected issues 	<ul style="list-style-type: none"> • Research may influence behaviour of study group • Limited generalisability • Control of researcher bias 	Does not generate direct benefit for host Company. Does not align well with subject of research unless study group is a paradigm of effective behaviour
Mixed Method	Combined quantitative and qualitative approach to explore complex, holistic problems/conditions and understand context, interrelationship of factors, cultural influences, perspectives.	<ul style="list-style-type: none"> • Strengths of qualitative and quantitative data combine • Broad understanding gained • Can utilise existing and new data • Triangulation increases validity 	<ul style="list-style-type: none"> • Difficult to design/implement • Results may be conflicting or ambiguous • Process vulnerable to criticisms of validity • Methodology used is variable and non-prescriptive 	Applied – Phase 2
Simulation	Real world situation imitated using suitable modelling technology and assumed relationships between factors	<ul style="list-style-type: none"> • Can be adjusted and re-run to consider multiple scenarios • Demonstrates complex non-intuitive outcomes • “Safe” environment 	<ul style="list-style-type: none"> • Output is entirely dependent on accuracy of input relationships assumed • Artificiality limits validity • Requires extensive calibration to be reliable 	Requires basic unit of flow or exchange; learnt material and/or useful observations are highly heterogeneous.

The term “action research” is attributed to Kurt Lewin, who defined it as “...*a comparative research on the conditions and effects of various forms of social action and research leading to social action*” (Lewin, 1946). For Lewin, research should lead to a tangible improvement in conditions; that which results only in literary work is insufficient. The research he envisaged was a cyclic process that would test and refine an applied theory or investigative process within the context to which it applies. The purpose, then, is twofold: to solve an identified problem *in situ*, and to develop principles or guidelines for best practice (Denscombe, 2010). Reason and Bradbury (2006) add that the exercise as a whole should be a democratic one, “...*grounded in a participatory world view.*”

Also of note is a technique similar to action research called “design-based” research, the intention of which according to the Design-Based Research Collective (2003) “...*is to inquire more broadly into the nature of learning in a complex system and to refine generative or predictive theories of learning*”. Barab and Squire (2004) identify the key strength of design-based research over action research is that “...*the design is conceived not just to meet local needs, but to advance a theoretical agenda, to uncover, explore, and confirm theoretical relationships*”. The application of the method to learning in a real-world setting is a key feature. In practice, however, the real-world setting is typically an educational establishment in which learning is a primary, purposeful and responsive activity.

Case study research has been defined as “...*an empirical inquiry that investigates a contemporary phenomenon in depth and within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident*” (Yin, 2009). It is particularly effective where the number of variables under study exceeds that of the available data points, or where there are multiple sources of potentially convergent data. Since the focus of the research is the generation or development of organisational learning (capacity), a case study approach would require a study

subject/context in which such development had already transpired (or was transpiring). For this reason, the case study is disregarded as a research model; as, by the same rationale, is ethnography.

Mixed methods research is a broad and flexible category, covering a range of designs which combine quantitative and qualitative methods and data in different proportions, orders and for different purposes. Its value is increasingly recognised because it offers a methodological structure which can draw on the strengths of, and synergise, both quantitative and qualitative approaches (Östlund *et al.*, 2011). Exploration is one of a number of research purposes to which it is well suited (Creswell and Plano Clark, 2011). The central challenge is in ensuring the datasets gathered can be combined in a way that supports the logic of the hypothesised relationships. Rigorous control in the collection of qualitative and quantitative data according to the dictates of the relevant methods is also critical.

Simulation research is an interesting option and one that has been used to effect in organisational science in general, and organisational learning in particular (e.g. Park *et al.*, 2015). Suitable technology (typically software) is used to forecast complex interactions and flow patterns based on relatively simple assumed criteria of interrelation. This allows multiple scenarios to be enacted virtually and without disturbing existing operational systems, and assumptions fine-tuned to improve the fit of the model to observed results. The weakness of the approach is as a predictive tool, as it is difficult to be sure that all potential interrelating factors have been identified or will relate in a new setting as previously observed. The intended research topic is a poor fit for this approach as the unit of flow in organisational learning is entirely non-homogeneous; one “lesson” is not the same as the next, either in content or (potentially much less so) in impact.

Phase 1 of the research was conducted as an action research study that also considered the key features, objectives and guidelines of design-based research (a)

to retain advancement of theory as a research goal and (b) because it is relevant to the aim of bringing about learning. The two methods share a great deal of common ground (e.g. Kolmos, 2015); Cole *et al.* (2005) examine similarities and differences at length by cross-applying the research criteria of each to the other and find little on which to draw substantial distinction. In practice it is the typical context of application that allows the two to differ; design-based research having been conceived and developed within the educational context. Identification and strategies for application of these principles is discussed in Section 3.4.

Phase 2 of the research was conceived in order to investigate an effect that was suggested by some of the data gathered during Phase 1. As the evidence of this suspected effect was elusory, and coverage in the literature thin, it was appropriate to consider a mixed methods study to improve visibility. Burke Johnson and Onwuegbuzie (2004) describe mixed methods as “...*an expansive and creative form of research*”, and Morse and Niehaus (2016) note that mixed method designs in general have the advantage of “...*enriching or expanding our understanding...*” compared with the use of a single method approach.

3.3. Data Collection Techniques

A supplementary, but important, question for social scientists after research design is the selection of a suitable data collection technique(s). The list of options below is collated from a number of authors representing such diverse topics as human factors in engineering (Stanton *et al.*, 2005), real-world research (Robson, 2002), psychology (Howitt and Cramer, 2008) and business studies (Saunders *et al.*, 2007); collectively covering a range of social sciences and disciplines.

- Focus Group
- Interview
- Mouse tracking
- Observation
- Survey/questionnaire
- Trace methods/secondary data

The relative merits and limitations of these techniques are summarised for brevity in Table 3.2, with the exception of mouse tracking (i.e. data generated by tracking participants' interaction with a computer³⁷).

Table 3.2 Qualitative Data Collection Methods³⁸

Advantages	Disadvantages
Focus groups	
<ul style="list-style-type: none"> • Multiple inputs obtained in a single exercise • Discursive setting may prompt greater level of engagement in some participants • Richness of data gathered • May generate new ideas • Efficient (compared to individual interviews) • Clarification/follow-up possible 	<ul style="list-style-type: none"> • Confidentiality hard to establish • Setting may bias sample (i.e. limited to those who are prepared to participate) • Some participants may dominate discussion • Analysis requires expertise • Logistically challenging: venue required, participants' schedules must coincide etc. • Biases (including social desirability) may be significant, and unmeasurable.

³⁷ Which would be impractical and ethically challenging in this research context

³⁸ Paraphrasing Stanton *et al.* (2005), Robson (2002), Howitt and Cramer (2008) and Saunders *et al.* (2007)

Advantages	Disadvantages
Interviews	
<ul style="list-style-type: none"> • Highly flexible medium of enquiry • Richness of data gathered • Can be confidential/anonymised • Clarification/follow-up possible • Range of styles/structures • Relatively easy to undertake 	<ul style="list-style-type: none"> • Voluntary basis may bias sample (i.e. limited to those who are prepared to participate) • Labour intensive • Interviewer skill may influence outcome • Biases (including social desirability) may affect outcome • Logistically flexible
Observation	
<ul style="list-style-type: none"> • Record based on real behaviour rather than reported behaviour • Not reliant on memory or interpretation of participant • Can be used to elicit differences between reported and actual behaviour • Potentially 	<ul style="list-style-type: none"> • Act of observation may bias action taken if participant is aware • Unawareness of participant is an ethical issue • Time-consuming (depending on activities observed) • Access/approval may be required • Potentially intrusive
Survey/Questionnaire	
<ul style="list-style-type: none"> • Flexible; applicable to innumerable scenarios and research questions • Can be used to capture attitudes, values, opinions, motives etc. • Simple to use, low cost • Can be anonymous • Models/guidance available • Online platforms available for little/no cost • Allows (some) quantification of data • Large (numerous) data sets can be gathered 	<ul style="list-style-type: none"> • Self-assessment biases (e.g. social desirability bias) may distort outcomes • Analysis may be labour intensive • Depending on sampling method used, responses may be limited in number, or limited to a particular demographic (i.e. people prepared to spend time on surveys) • Ambiguous questions may deliver misleading answers • Dependent on truthfulness/patience of participants
Trace Methods/Secondary Data	
<ul style="list-style-type: none"> • Non-invasive; minimal impact on practice • Can reveal longitudinal trends • Can corroborate observed relationships suggested by other datasets • Broadens understanding of context • Variety and large quantity of data sources/types may be readily available. 	<ul style="list-style-type: none"> • Potentially unreliable; may not be possible to challenge content • May be difficult to locate data specific to the community under study • Inequality of contribution/record; unlikely for contributions to be uniform • Ethically dubious depending on type of data gathered

Research Phase 1 uses survey and secondary data, and observation to a limited degree; Phase 2 features interviews followed by further survey. Further detail on execution of these data collection exercises is provided in Sections 4 and 4.2.

3.4. Principles of Application

Studies are generally considered exploratory when there is no or only limited prior research on which to base a theory or predict an outcome. Consequently, the aim of a study that is intended as exploratory is to gain a preliminary or enhanced understanding of the nature of the problem (e.g. Saunders *et al.*, 2007). An exploratory study may be succeeded by more targeted research, building on the earlier results, or adjustment or abandonment of the research question. Since the aim is clarification, it follows that the exploratory study does not aspire to hard deduction, although tentative conclusions may be offered with a proposal for corroboration (i.e. confirmatory research). If the research has no aspiration to conclusiveness and no prescribed format it is reasonable to ask what, if any, methodological standards may apply? Is any effort justifiable if it helps to generate theory, regardless of rigour and academic defensibility?

Stebbins (2001) offers two pieces of advice to the exploratory researcher: maintain flexibility in the type of data sought; and open-mindedness in the choice of search locations. These are not methodological standards by any means, and they add to the impression that exploratory studies enjoy loose governance as a category. It should be noted that for any exploratory study following a particular design must of course satisfy the criteria relevant to that design. It should also be noted that Stebbins (2001) acknowledges ethicality as a key requirement for exploratory studies, as a sub-category of social science research in general.

Reiter (2013) considers the exploratory approach from a philosophical perspective and builds a case for exploration as a rival to “confirmation³⁹” rather than a precursor. He proposes a number of standards for “good” explanatory research as a purposive exercise, as follows (Reiter, 2013):

³⁹ Inverted commas used to reflect the scepticism Reiter expresses for this term.

1. Validity is served by demonstrating robustness and plausibility of the induced connection/explanation. The aim is not to “prove” any construct, but to build a strong and logically defensible case in its support. Similarly, the value of the exercise is not in how much of a phenomenon is explained, but the quality and fit of the explanation applied within its acknowledged limits.
2. Dialectical reasoning (i.e. the advancement of theory by the negation of prior theory) is a strong basis for exploratory enquiry.
3. Cases for study should be selected to amplify the effect to be demonstrated, rather than to achieve a scientific balance.
4. Since it is fundamentally impossible to approach the research devoid of any pre-conception about what may transpire, the researcher should always hypothesise or at least state expected outcomes so as to offer them for critique as part of the study. An openness must then be maintained to the possibility of alighting on entirely new explanations for conditions observed.
5. The researcher must exercise a high standard of honesty, transparency and self-reflexivity to achieve methodological rigour. This requires self-awareness of the researcher’s situatedness, limitations, expectations and biases.
6. A successful outcome of exploratory research is achieved by the generation of novel, valuable, insightful and plausible theories, hypotheses or viewpoints, and not by the accumulation of factual evidence.

Reiter (2013) also recognises the need for a research design that is appropriate, clear, well planned and rigorously executed.

Exploratory principles having been considered, those specific to the Phase 1 and Phase 2 designs selected are explored in the sections that follow. The tables located in Appendix B summarise the key challenges anticipated based on the research designs chosen for Phases 1 and 2 and how these are met by the corresponding plans.

3.4.1. Action Research

Action research, to its advocates, provides a bold response⁴⁰ to the fundamental void separating research and practice, effectively by making research of practice (Gustavsen, 2003). As a general description of process, the action research process begins with an examination of the concept or idea to be tested in light of the available means for exploration, i.e. with regard to what can realistically be achieved within the particular setting (Saunders *et al.*, 2007). A plan is developed which identifies overall strategies for achieving the objective or problem resolution, and details specific activities to be undertaken by way of a “first step” in the cycle. It is not uncommon for this planning to result in a modification of the original ideas/aims.

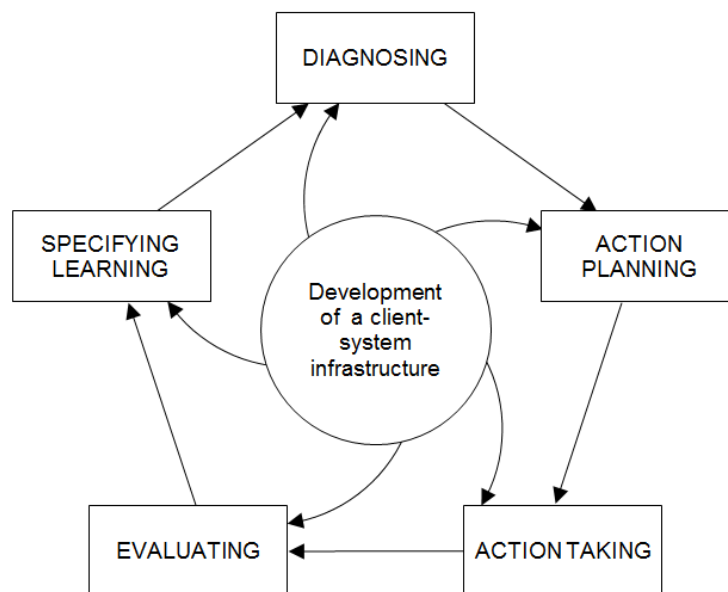


Figure 3.1 Action Learning Cycle (Susman and Evered, 1978)

“First step” activities are then executed and influence/outcomes observed, with careful consideration of the interaction of researcher and context. Observations are reflected upon and used to tailor stepwise activities for the subsequent step; a cycle that continues until the objectives or timeframe of the overall plan are met. Since the process achieves (or aims to achieve) practical results and does not require any kind

⁴⁰ Not, by any means, the only one.

of reduction of the operation of the overall contextual system, it is well suited to applications such as large organisations and institutions. Action research has previously been applied in a wide range of contexts including higher education (e.g. Haslett *et al.* 2010; Levy and Brady, 1996), pharmaceutical (e.g. Ingelgård *et al.*, 2002), law (e.g. Hamadani Janes *et al.*, 2013) and government (e.g. Corbett and Kenny, 2001).

Badger (2000) asserts that there is no current single definition of action research, and reviews differing definitions to identify potential defining features as: self-enquiry (of the organisation or participant group); use of interventions; real-world location; dual purposes of developing theory and driving desired change; dual role of the practitioner as researcher. They conclude that the key feature that ought to serve as a basis for definition is the problem-solving aspect. Susman and Evered (1978) concur with this action focus, citing the central epistemological aim of action research as “...*the development of guides for taking actions that produce desired outcomes*” (as opposed to any academic agenda). What, then, are the standards to be met by a proposed action research study to qualify as such?

Stern *et al.* (2014) paraphrase Heron and Reason (2008) to summarise four defining features of “good” action research:

1. Pursuit of “worthwhile practical purposes”, entailing:
 - Solving or alleviating authentic “real world” problems;
 - Empowering participants by developing skills accordingly and helping/ training others;
 - Framing actions within a humanistic value system.
2. Collaboration/participation, entailing:
 - The involvement of actual members of the community under study as research participants;

- The establishment of a series of ethical rules of engagement to protect the interests of participants and other community members.
3. Responsiveness in execution, achieved by:
- Conscientious and repeated adherence to the established research cycle, including reflective stages;
 - Incorporating stakeholder objectives and feedback into action planning to ensure that the process responds to the community under study.
4. Connection of theory and praxis, by:
- Achieving balance between the active and reflective stages of the cycle;
 - Generating/advancing theoretical knowledge;
 - Delivering context-specific and (where possible) generalised solutions and practical improvements

Badger (2000) identifies the main challenges facing the action researcher as methodological rigour and ethical issues. Methodologically, proponents of action research differ on the relative importance of reliability, validity and reflexivity; the latter being critical in qualitative research (Badger, 2000). For some (e.g. Rolfe, 1996) however, such methodological concerns should not be allowed to detract from the pursuit of a tangible improvement in practice. Validity is achieved for Greenwood (1984) if the results of the research appear subjectively to fit reality. Waterman (1998) takes a more comprehensive approach, distinguishing three categories of validity: dialectic, critical and reflexive, relating to the analysis of contextual complexity, of change and of researcher influence respectively. The conservative course of action is to adopt the latter approach.

Reliability is achieved in this research context via the consultative nature of the process; the researcher's interpretations are effectively authenticated by participants' corroboration (Badger, 2000). It must be pondered, then, whether any dissenting

opinions are sufficient to render the researcher's conclusions unreliable, and if so what proportion, in the event of a split vote. The requirement for reflexivity is satisfied by the researcher constantly scrutinising the impact of their actions on the outcomes of the research (Badger, 2000). The RE would submit that, whilst it may be difficult but possible to anticipate all interactive effects, the magnitude of researcher impact can only ever be speculated upon.

Ethically, Badger (2000) warns of a potentially unavoidable researcher-practitioner conflict, of researcher exploitation of participants, and of the action research-specific challenges of ensuring consent is informed and protecting anonymity and the right of participants to withdraw from the study. The dual objectives of the research may result in situations where one decision preserves the value of the research and the other favouring the practical outcome. Equally the researcher may overlook the (in particular, long term) implications of a particular intervention for the participants or other stakeholders in pursuit of either objective. In the execution of a study with a temporal aspect, the researcher must accept that consent and commitment given at the outset may be withdrawn at a later stage and provide room for self-exclusion of participants.

3.4.2. Design-based Research

Design-based research principles were considered in addition to those that govern action research in order to ensure that the study was aligned to the objective of promoting and delivering learning (albeit in an atypical context).

The stages of design-based research as modelled by Amiel and Reeves (2008) are:

1. Analysis of practical problems by researchers and practitioners in collaboration;
2. Development of solutions informed by existing design principles and technological innovations;
3. Iterative cycles of testing and refinement of solutions in practice;
4. Reflection to produce "design principles" and enhance solution implementation.

A wide range of measures may be used by way of intervention; from a specific learning activity or technological innovation to an administrative change. Anderson and Shattuck (2012) consider intervention design to be task best conducted in a collaborative exercise between researchers and practitioners, and it should be undertaken with regard to applicable literature and theory. As noted by Lewin (1946) in relation to action research, the intervention must be commensurate with the context; it must be achievable with the resources at hand. Research plans, interventions, and even data collection methods must all be responsively applied and changed if found incompatible with the learning context in practice, without undermining the overall objectives and validity of the exercise.

Collins (1992) prescribes a number of desirable facets for design-based research experiments. These are listed in Table 3.3, along with proposed equivalents as appropriate to suit the organisational learning context.

Table 3.3 Facets of Design Experiments (Collins, 1992) and Organisational Equivalents

Facet of Design-Based Research	Facet as Applicable to Organisational Learning
Teachers as co-investigators	Stakeholders and management-level participants as co-investigators
Comparison of multiple innovations	No change
Objective Evaluation	Researcher as practitioner undermines objectivity. Potential bias acknowledged; objective evaluation used wherever possible but in conjunction with subjective measures
Testing of technologies most likely to succeed first	No change
Multiple expertise in design	No change
Systematic variation within sites	Depends on organisational structure. Comparison between groups within sites
Flexible design revision	No change
Multiple evaluation of success or failure	Triangulation of metrics to corroborate observations. "Success" and "failure" may not be binary options.

It should be noted that no evidence of prior use of design-based research in the context of organisational learning as defined herein has been discovered. Of course, this raises the question of whether or not it is valid to make this application. An affirmative answer is suggested on the grounds that all the identified conditions that make educational (institution-based) learning suitable for design-based research are present in the organisational case. As Brown (1992) firmly opines, context is highly influential on learning and cognition; this is certainly the case in the field of organisational learning, where the subject of the learning process can only be understood in relation to its context.

Key challenges facing a researcher in the design, execution and measurement of a design-based research study are summarised by the Design-Based Research Collective (2003) as follows:

1. Researcher objectivity can be in conflict with the concurrent aim of bringing about a particular end.
2. Causality between intervention and outcome may be difficult to determine due to complex confounding factors and design flexibility.
3. Precise replication of a particular intervention is fundamentally problematic to the point of impossibility.
4. Maintenance of an effective collaborative partnership with research participants is difficult given the (typically) fluid boundary of the research group.
5. Knowledge claims may be misused if the research design is not suitably applicable to other contexts.

3.4.3. Mixed Methods

Creswell and Plano Clark (2011) cite Greene, Caracelli and Graham as the earliest significant definition of mixed method research designs; simply “...*those that include at least one quantitative method and one qualitative method, where neither type of*

method is inherently linked to one paradigm" (Greene *et al.*, 1989). Burke Johnson and Onwuegbuzie (2007) engage with 19 prominent mixed methods researchers/ authors and assimilate the elements of the resulting definitions to align on:

"Mixed methods research is the type of research in which a researcher or team of researchers combines elements of qualitative and quantitative research approaches for the broad purposes of breadth and depth of understanding and corroboration." (Burke Johnson and Onwuegbuzie, 2007)

The definition of the term, then, sets very few bars to entry; only the use of both types of data, and the objective of gaining a richer picture as a result. This is perhaps appropriate, since the combining of other established and rigorously-controlled methods is not a "method" in and of itself, but an approach to enquiry. The validity of the research is therefore derived from the validity of the methods mixed, coupled with the satisfaction of any methodological challenges associated with the combination of those specific methods and resulting datasets. This latter category of validity is therefore governed by the specific mixed methods design invoked which must in turn be identified.

Greene *et al.*, 1989 propose five types of mixed methods research based on purpose (rather than process) on a spectrum from "constrained-narrow" to "open-wide" in aspiration: triangulation (constrained-narrow extremity), complementarity, development, initiation and expansion (open-wide extremity). More recent typologies have focused on categorisation based on the ways and proportions in which the two methods can be "mixed", in terms of the concurrency (or otherwise) of the activities, and their order and priority. Burke Johnson and Onwuegbuzie (2007) portray the mixture of methods as a spectrum, with pure quantitative and pure qualitative at either extreme, "pure mixed" in the centre, and mixtures with one or the other approach dominant in between.

Creswell identifies six mixed methods design structures as common (Creswell *et al.*, 2003); later refined (Creswell and Plano Clark, 2011):

- Convergent (or “triangulation”); characterised by the concurrent conduction of both qualitative and quantitative data collection to support the same theory.
- Explanatory-sequential; characterised by the collection of quantitative data, followed by a qualitative stage to broaden understanding.
- Exploratory-sequential; characterised by the collection of qualitative data, followed by a quantitative stage to corroborate ideas generated.
- Embedded (or “nested”); characterised by the introduction of mixed data collection methods into a study of a conventional design.
- Transformative; characterised by the intent of the study as an agent of change, typically in the field of social justice.
- Multi-phase; characterised by its timeframe and scope. This design is used to pose numerous related research questions in sequence over the course of a number of years.

This typology remains authoritative, and the categories identified are echoed in recent literature.

Given the exploratory intent of Phase 2, the best fit of these approaches to the objectives of Phase 2 is the exploratory-sequential. The priority of the research is typically the initial qualitative stage, with the integration of the two datasets being conducted at the interpretive stage (Creswell *et al.*, 2003). The inverse assignment of priorities is also acceptable however and is recognised as the “instrument-development variant” (Creswell and Plano Clark, 2011); other subtler variations are also possible. This methodology has previously been applied in a range of contexts, including market research (e.g. Hüttinger *et al.*, 2014), medical (e.g. Stoller *et al.*, 2009), social science (e.g. Ladegard and Gjerde, 2014) and management (e.g. Myers and Oetzel, 2003).

Challenges noted by Creswell and Plano Clark (2011) in the execution of the

exploratory-sequential model are mostly associated with the progression between stages. It may be difficult to specify the exact procedures⁴¹ for the quantitative stage at the outset of the study, for example, given that they may depend on the outcome of the qualitative stage. Creswell *et al.* (2011) note that research designs may be fixed or emergent, the latter style allowing for deferment of finalisation of second-stage procedures. If a quantitative instrument is to be developed later, consideration must be given at the outset as to how this will be achieved. Similarly, quantitative scoring methods must be developed with consistency/coherence of overall research argument in mind.

Creswell and Plano Clark (2011) then make the recommendation to use a larger sample size for the second (quantitative) stage than for the primary rather than *vice versa*, to pre-empt concerns about bias. Finally, they flag the longer duration of the sequential approach as a potential limitation, to which Creswell *et al.* (2011) add the logistical issues surrounding resources (for multiple studies), teamwork (i.e. coordination of resources), and rigour in sampling. Critically, they also note that the analytic logic used (and hence the validity of the combination) must respond to the concurrence of the data acquisition processes, the stage that is considered dominant and the point of interface of the methods (i.e. when the “parts” are to be combined).

Other principles/guidelines recommended are:

- Definition of concepts to be measured: Abowitz and Toole (2010) note, in relation to the application of mixed methods designs in the construction industry, that care must be taken in non-social science settings to ensure that intangible concepts are accurately and operationally defined. This is particularly important in mixed method research because the impact of ambiguity of concept as the study progresses is much greater.

⁴¹ The concern is noted in reference to research scenarios where approval must be obtained by some regulatory body prior to commencement.

- Research questions must be suitable for context: Creswell (1999) draws attention to the importance of expressing research questions in a manner that is meaningful and answerable in both the qualitative and quantitative stages. Similarly, data collection techniques must be chosen for compatibility with one another and the overall logical case they are to support.
- Clarity of communication is critical: since the value of a research study is undermined if it is inaccessible to the wider academic community, accuracy and coherence of reporting are essential. A mixed method report or research paper may tell a more complex story and therefore be harder to follow. Creswell (1999) recommends “...a *well-organized narrative, clear writing style, and precise word choice*” as well as the use of a visual model(s) to understand the design.
- Management of conflicting data: Malina *et al.* (2011) suggest that research planning should consider how to manage data inconsistencies or conflicts between the datasets.

The principles and guidelines discussed in the previous sections are summarised in Section 4.2.1 as standards for governance of Phase 1 and Phase 2 research. The section that follows explains how the principles was applied during planning and execution of the research (also summarised in Section 4.2.1).

4. Method

The research activities undertaken were as follows:

- An action research study (Research Phase 1), comprising:
 - Cycle 1 (six month duration) which introduced and monitored the progress of a number of targeted intervention.
 - Cycle 2 (six month duration) with interventions tailored to reflect outcomes and observations made during Cycle 1.
 - Cycle 3 (six month duration) with interventions tailored to reflect outcomes and observations made during Cycle 2.
- A mixed methods study (Research Phase 2), comprising:
 - Qualitative study (Stage 1): semi-structured interviews conducted with a small sample of OGCom members.
 - Quantitative study (Stage 2): cross-industry survey conducted to measure the variation in scale of effects between companies and industries.

Aims, design and control measures, and results are presented in the sections that follow.

4.1. Phase 1: Action Research Study

The subsections below describe the specific research conducted and explain how the principles established in Section 3.4 were applied in practice.

4.1.1. Phase 1 Aims of Study

Generating solutions to authentic problems and empowering participants to solve authentic problems are central aims (and therefore features) of action research (Stern *et al.*, 2014; Heron and Reason, 2008). The authenticity of the problems that this research phase aimed to address is verified (a) by exploration of issues affecting the operation of host company OGCom with a group of central stakeholders and (b) by

investigation of key themes and challenges evident from the literature (for which see Chapter 2, and in particular Section 2.5).

The action research plan aimed to progress the collective understanding of organisational learning by exploring three Research Questions:

Research Question 1⁴² (RQ1.1)

To what degree can the Kolb-esque “experiential” organisational learning model be discerned in operation at OGCom?

Research Question 2⁴³ (RQ1.2)

If barriers to the effective functioning of the Kolb-esque cycle are removed, will engagement in the process naturally proliferate within the organisation, as a resonant effect of harnessing individual experiential learning?

Research Question 3⁴⁴ (RQ1.3)

Does learning practice create learning culture; i.e. does enhancement of organisational learning result in the emergence of/increase in qualities evidencing the Learning Organisation disciplines (as per Senge, 2006)?

The research construct supporting these questions is a simple one: that learning is intuitive and will happen organically on an organisational scale if not impeded. Moreover, it will happen with sufficient abundance to show a discernible improvement in the characteristics that typify strong learning culture, otherwise called “the Learning Organisation”. As action research must be flexible and responsive in achieving its practical ends, the focus at all stages will be to verify and enhance the Kolb-esque cycle and using only “bottom-up” learning mechanisms and channelling “natural” (i.e.

⁴² Discussion/response provided in Section 5.1.

⁴³ Discussion/response provided in Section 6.1.

⁴⁴ Insufficient evidence obtained to support a direct response but discussion/indirect response provided in Section 7.1.

based on individual) learning processes.

The theoretical knowledge that this outcome would generate, and thereby support the connection of theory and praxis (Stern *et al.*, 2014; Heron and Reason, 2008), is that it would substantiate a case for the “bottom-up” learning organisation which is generated by actions taken at ground level and without substantial investment, and shed light on the relationship between the organisational learning and learning organisation concepts; specifically (if the exercise is successful) that they are related as are practice and culture respectively. An unsuccessful exercise would also provide insights into these aspects, as unexplored paths through the bodies of theory, although they would not be logically sufficient to disprove the suppositions.

The generalisability of this knowledge was not tested directly, since the study took place in a single organisational setting. However, since the exercise was designed to prove a concept rather than a rule, a successful outcome in a single setting is sufficient for this purpose and would justify further corroborative research. Moreover, the research construct and measures applied were chosen to be as non-contextual as possible with the intention that they could be easily transferred to other settings. There is certainly no reason to expect different outcomes in other settings, with the possible qualifier that uniformity would be expected to be greater in other settings that are project-based in nature; like OGCom and its parent industry.

The empowerment of participants to solve authentic problems was addressed by the establishment (for this and other reasons) of a group of participants within OGCom to collaborate, generate ideas, and review and challenge results and their interpretation. This participant group was made up of managers and senior managers within OGCom and was assembled at the outset of the exercise. The group convened (although attendance varied with availability) on a monthly basis; was briefed in full on the objectives and design of the research; and acted as a sounding board for cyclic conclusions and plans for subsequent cycles. In this way, the participants had an

overview of the practical process that was comparable to that of the RE. Having not reviewed the pre-existing literature in depth (prominent authors and ideas aside) they did not gain the same theoretical understanding however.

In the context of this study the RE served as both researcher and practitioner, and also that other parties (mainly practitioners) also collaborated in the process. Measures taken to acknowledge and minimise associated biases are described in Sections 4.1.5 and 4.1.4.

4.1.2. Phase 1 Study Programme

The research period was divided into three iterative cycles of six months' duration. The duration chosen was deemed to be appropriate given that the interventions were not instantaneous and required some time to establish, and that it was realistic to observe some sort of change within this timeframe. It is intrinsic to the nature of action research that some degree of flexibility is required; greater or lesser input may be required for a given intervention, or it may be necessary to abandon/amend. However, the six-month cycle was established as the main loop of the cycle, regardless of smaller "eddy" effects.

The research cycles were planned around Susman and Evered's (1978) model (see Figure 3.1. Diagnosing and action planning took place concurrently (or in rapid succession) within the first half of the first month of each cycle. This was necessarily kept brief to allow the maximum benefit to be gained by the subsequent action taking stage. Ethnographic and other opportunistic data was gathered intermittently throughout the action taking period, but as the end of the cycle approached the periodic questionnaires were collected along with other non-continuous data. Chasing up responses typically took up to a month, with some responders needing several reminders. The data were evaluated during the final month, and finally (in each cycle) learning achievements and aims were assessed before the start of the next cycle.

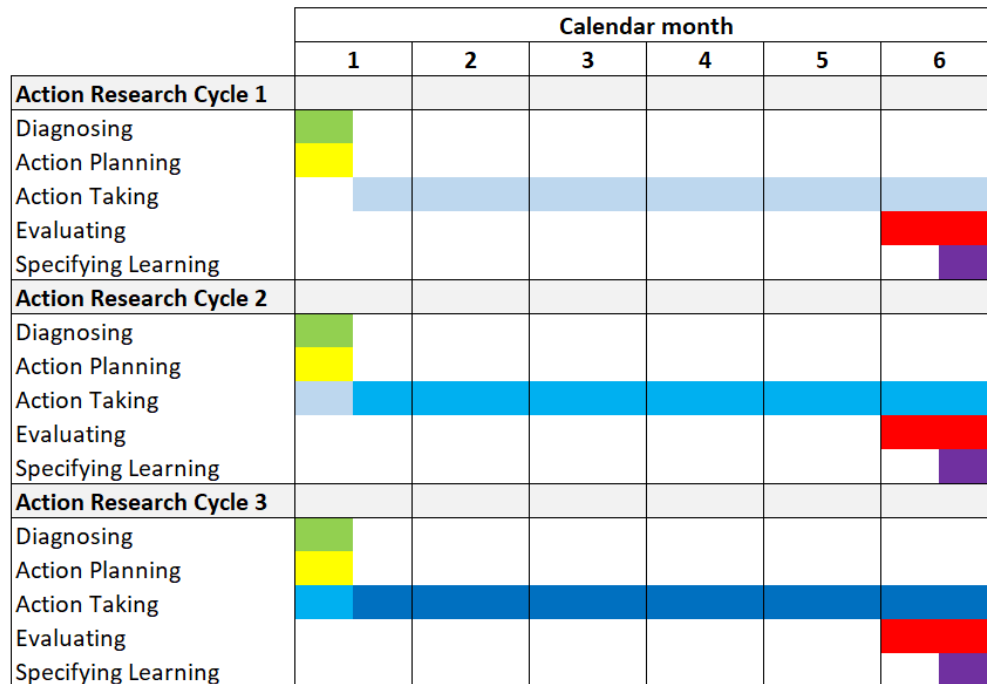


Figure 4.1 Action Research Programme

Monthly meetings with the participant group were commenced as an action in the first cycle and then maintained through the remainder of the research period. Other actions were similarly cumulative where they were considered effective.

An acknowledgement was made at the outset that the research plan needed to have sufficient flexibility to take more frequent, one-off actions in order to maintain progress towards the stated outcome. In practice however the cycles were conducted without any requirement for urgent change.

4.1.3. Phase 1 Interventions

The aim of the action research study being to develop the organisational learning capacity of the host Company, specifically by promoting alignment with the organisational expansion of the Kolb-esque cycle, the programme of interventions was designed to “de-obstruct” the (speculated) natural permeation of the individual dynamic to the organisational context. Since the dynamic was mooted to be naturally emergent in the organisational setting (given a framework to follow and minimal encouragement), it follows that the interventions should be low impact and “bottom-up” in nature.

Interventions are designed to meet the following criteria:

- They must be applicable in other contexts;
- They must be low-impact; i.e. not directly alter Company practice;
- They must be ethical, and not disadvantage organisational members; participant or otherwise;
- They should focus on participation by enrolment rather than instruction;
- They must focus on the 'practice' end of the business rather than 'policy' (i.e. follow a "bottom-up" rather than "top-down" approach);
- They must support the theoretical objective as well as meet local needs;
- They must focus on what will work in the real world rather than conceptual correctness.

To expand on this final point a little; the organisation is an operating consultancy business in which all personnel must account for each of their weekly hours in order to bill clients/absorb overheads appropriately. Even if a non-reimbursable billing code was established against which participants could book time for their cooperation (of whatever type), it would still be the case that client-funded work would be the overriding priority. Interventions were chosen with this in mind, to ensure that they would be workable with low input from participants.

As an example, the diagnosing exercise conducted at the beginning of the first cycle identified some gaps in the Kolb-esque cycle at that time partially in operation within OGCom; specifically, the collective assessment and design of appropriate measures to respond to learning observations, ineffective dissemination processes and a general failure to consistently apply the process. Intervention actions planned and taken in the first cycle were therefore:

1. Establishment of a management forum for discussing and disseminating learning
The participant group was established and monthly meetings set up to enable

collective discussion of learning topics, including assessment and planning of changes arising from observations. This group was also able to then cascade information down to their subordinate groups.

2. Functional changes to the online learning system to facilitate usage

Feedback was sought (continually through the cycle period) on the existing online learning database and functional changes made to make it easier to use.

3. Collation of Historic Lessons Learnt

As the database was underused at the outset, it was decided that logging the lessons and resultant actions from a number of high-profile past projects would (a) demonstrate effective use of the system, (b) help to enrol others to do likewise and (c) engage the people involved with these projects in the use and further development of the system and with learning in general.

It is submitted that these actions are non-industry or discipline specific and are sufficiently generic to be applied in other organisational contexts. They are also relatively repeatable; they relied predominantly on the agency of groups and it is likely that similar responses would be seen in other contexts.

4.1.4. Phase 1 Measurement

Whilst action research is generally considered to be research method falling into the qualitative paradigm, studies may use either (or both) data collection methods (Badger, 2000). During the AS study, both types of data were obtained wherever possible to enhance validity, triangulate findings and support inductive reasoning. Quantitative metrics were included to allow a more detailed assessment of rate of change, correlations with other factors, etc. Qualitative measures were also used to provide richer contextual features and allow greater understanding of underlying causes of changes observed.

The main iterative data collection exercise took the form of a six-monthly online

questionnaire that was sent to a responder group within the company, representing a proportional spread of disciplines, seniority and gender. The group was randomly selected from OGCom personnel and numbered 95 at the outset of the research⁴⁵. Responders were approached individually in order to maximise participation (which was high). The same responders were asked to complete the questionnaires at the beginning and end of each action research cycle so that changes could be tracked by responder if necessary. The questionnaire elicited both qualitative and quantitative responses on a range of different topics.

The questionnaire was of bespoke design, and prioritised ease of response to encourage maximum participation. The questions were designed for purpose, but utilised established mechanisms wherever possible (such as Likert-type scales). Questions were scrutinised according to the checklists provided in “Research Methods for Business Students” (Saunders *et al.*, 2007) governing validity control of wording, ordering and layout. The questionnaire was then pilot tested on a small scale to ensure that each question elicited the type of response it sought; some adjustments were made as a result of this exercise. Quantitative questions were made obligatory, and those that were provided to record additional comments were not.

Other measures used were also qualitative and quantitative, and included:

- HR data (e.g. training applications received);
- System usage data (e.g. number of log-ins, number of observations made);
- Meeting agendas and minutes;
- Company bulletins and group emails;
- Ethnographic observations.

Measures used in this study can be divided into three categories:

⁴⁵ But depleted to 38 through the research period.

1. Those that gauged the degree to which the effective operation of the Kolb-esque cycle was operating (“Direct Metrics”).
2. Those that identified changes in the status of Senge’s five pillars of the Learning Organisation (“Indirect Metrics”).
3. Those that monitored background levels to identify potential confounds or alternative influences (“Background Metrics”).

Direct Metrics

A number of instruments have been proposed over the years for the measurement of the degree to which organisational learning is taking place within a company, including the “dimensions of the learning organization questionnaire (DLOQ)” (Watkins and Marsick, 1993), the “Learning Organisation Diamond” (Moilanen, 2005) and the “organizational learning survey” (Garvin *et al.*, 2008). The aim in the action research study was to measure learning process rather than the characteristics of learning. Lähteenmäki *et al.* (2001) note that, whilst it is difficult to measure learning by outcome it is possible to measure the process on a step-by-step basis; in this case by measuring instances of each of the Kolb-esque cycle steps:

- Observations; as recorded in the Company online lessons learnt database.
- Assessment; the number/proportion of project teams using the system was used as a proxy for the practice of assessing lessons on a project basis.
- Design; as discussed in learning related meetings of the participant group.
- Implementation; ethnographically observed instances of changing policy/practice as a result of the previous stage(s).

Additionally, changes in business practice/models/systems that suggested the presence of “double-loop” learning were recorded wherever observed as an indication that the learning process was taking on greater depth and profundity.

The questionnaire also included questions on the degree to which the Company was

perceived as engaged in learning on project/group and organisational levels.

Indirect Measures

A range of measures was used to gauge changing levels of permeation of the five disciplines of the Learning Organisation as per Senge. It has previously been noted that using these disciplines as the basis for assessment is specious where the intervention(s) also targeted these aspects. In this case however, the Learning Organisation characteristics are a dependent variable only and the intervention focuses instead on learning practice (specifically the stages of the Kolb-esque cycle).

The periodic questionnaire was used to obtain responders' self-assessed impressions of the degree to which the Company exhibited each of the five disciplines. Approximations were used where necessary; for example, anticipating that there may be significant differences in the interpretation of the phrase "systems thinking", responders were instead asked to record the degree to which they thought the Company demonstrated "holistic thinking" and "high efficiency". Other proxy metrics and ethnographic observations were also used to corroborate the trends suggested by the quantitative data. Examples are:

- Evidencing Systems Thinking
 - Observation of instances of optimisation of organisational systems; conjoining of groups or functions of groups; cutting of red tape and inefficient procedures.
- Evidencing Team Learning
 - Monthly HR data on number of learning meetings scheduled (demonstrating intention to create learning groups)
 - Number of modules developed for the Company online learning platform.
 - Observation of instances of reflective exercises and meetings held on projects for learning purposes.
- Evidencing Shared Vision

- Observation of instances and/or bulletins in which consistency and pervasion of shared goals and priorities was apparent.
 - Ethnographic observations of responses to such instances and bulletins.
- Evidencing Use of Mental Models
 - Observation of instances of generation and publication of models.
- Evidencing Personal Mastery
 - Number of training requests submitted per month.
 - Registered interest/applications to internal Company training programmes.
 - Attendance rates at Company learning meetings.

Background Metrics

A range of background measures were also used in order to identify confounding factors occurring during the research period. These comprised:

- The industry “outlook”, measured by global crude oil prices.
- Organisational change; significant changes in the structure of the Company.
- Personnel numbers (staff and contractor).
- Member moral (via self-assessment in the periodic questionnaire).
- Usage of other Company systems; two other systems (one for health and safety observations and the other for quality control) used by the Company that require access via an online platform and of which usage can therefore be quantified.

4.1.5. Phase 1 Reflection

The reflective and planning stages of the action research cycle took place towards the end of each cycle. For each iteration of the cycle, data gathered over the previous six months was reviewed and trends identified where possible. These were discussed with the participant group so that interpreted results were tested and corroborated, and the action plan for the subsequent cycle was tabled and discussed. The influential position

of the RE as researcher and practitioner was acknowledged, as was the fact that the participant group did not represent a full cross-section of all levels of the Company, and conclusions challenged for objectivity. A summary of progress and planning was also passed to a senior management stakeholder group for review.

4.1.6. Phase 1 Ethics

A key challenge to the ethicality of the action research exercise is the concurrent resolution of twin objectives; i.e. practice and praxis. Misalignment between the objectives of the host company and the requirement for academic novelty is not uncommon to the EngD programme and may exacerbate the conflict. This action research study sought to diffuse this situation by effectively making the two objectives align, since the aim was to demonstrate that a particular beneficial change is a possibility. Improvement of practice is achieved by successfully delivering this change; theory is progressed by demonstrating that it is possible.

Consent was obtained from each survey group participant; participants were made aware of the objectives and purpose of the study; that they were free to cease participation at any point, and they were informed to whom any complaints about the process may be addressed (a nominated Company director with full knowledge of the research project). It was made clear to each (prior to consenting) that a series of periodic measurements would be taken. Consent was gathered at each iteration of the data collection process, in order to ensure that the study did not outlast the consent.

Data gathered was stored confidentially and anonymously, and outside of Company software and systems. Quotes from action research data used in this document are anonymised and used only where the identity of the participant cannot be discerned from the content. The consultation group was informed as to the study's design and

objectives and made aware of how to register a complaint about the process⁴⁶.

⁴⁶ No complaints were raised.

4.2. Phase 2: Mixed Methods Study

Reiter (2013) advocates a focus on the formation of theories which are novel, useful and plausible in exploratory research in general. The suppositions to be tested in this Phase 2 study were suggested by the results and analysis of the Phase 1 study, and their plausibility is therefore supported.

4.2.1. Phase 2 Aims of Study

The main aim of the mixed methods study was to explore the degree to which members of an organisation are motivated by a desire to progress their collective interests. The Phase 1 study indicated that, though there is a logical case for such co-motivation, in practice it is far weaker than self-interest as a driver and may therefore be a major inhibition to organisational learning. Further demonstration of this motivation “gap” (particularly in multiple industries) would support a dialectical challenge to the majority of existing organisational learning models by identifying a common misassumption. This was to be delivered by addressing the following research questions:

Research Question 1⁴⁷ (RQ2.1)

How ubiquitous is the motivation “gap” to support organisational interests?

Research Question 2⁴⁸ (RQ2.2)

Does this motivation “gap” apply equally to member group (as perceived) interests?

Research Question 3⁴⁹ (RQ2.3)

Are there any discernible differences in these trends between dissimilar industries?

The overall expectation was that the “gap” would prove to be present and relatively

⁴⁷ Discussion/response provided in Section 6.4.

⁴⁸ Discussion/response provided in Section 8.2.

⁴⁹ Discussion/response provided in Sections 6.4 and 7.3.

constant across all organisations of the different industries involved in the second stage of the study but would increase with organisation size (based on member numbers). Group interests were expected to outperform organisational interests in terms of driving members' motivation levels. An openness to alternative explanations and causes was maintained however, and for this reason responders in the quantitative part of the study were invited to provide qualitative comments in order to allow other theories and explanations to emerge.

As Creswell (1999) highlights, it is important to ensure in mixed methods research that questions explored are relatable to both the qualitative and quantitative phases. In fact, a highly subjective and intangible quantity such as motivation is challenging to measure and compare either quantitatively or qualitatively; using both approaches gives greater confidence in the outcome observed. Since there is no absolute measure of motivation or the potency of any particular factor as a driver of behaviour, *relative* motivation is analysed in both stages of the study; suitable qualitative and quantitative measures are derived (see Section 4.2.3)

4.2.2. Phase 2 Study Programme

The mixed methods sequential explanatory design comprised two distinct stages (Stages 1 and 2). Stage 1 was a qualitative exercise conducted to expand understanding and refine the design of the subsequent Stage 2. Stage 2 was a quantitative exercise intended to demonstrate a relationship and test it in a number of different contexts. The rationale for this approach is that the qualitative data elicit understanding which is then substantiated and expanded by the quantitative data.

Since the quantitative stage is dominant the model applied was the “instrument-development variant” (Creswell and Plano Clark, 2011), represented typographically as “qual → QUAN”, and schematically as shown in Figure 4.2.

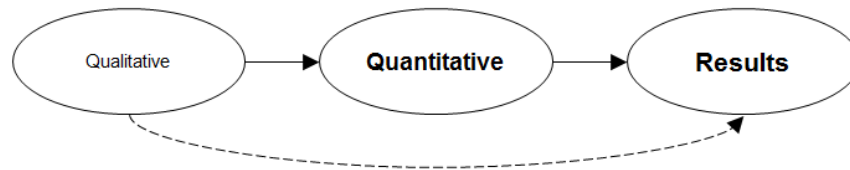


Figure 4.2 Instrument-development variant (Creswell and Plano Clark, 2011)

Stage 1

The qualitative stage used semi-structured interviews to assess a suspected gap in the Kolb-esque organisational learning cycle (see Chapter 2), in the form of a failure of motivation on behalf of members to flag observations of potential value to their organisation. Questions asked focused on four areas:

1. Interpretation of “organisational learning” and perception of Company learning.
2. Usage of Company systems (organisational learning and two other comparable proprietary systems used) and opinions on the value and efficacy of those systems.
3. Motivation/drivers for individual learning and contributing to organisational learning.
4. Identification with Company groups or sub-groups (asked to establish what sizes of organisational unit exist)

The interviews were guided in that topics were introduced, but they were then allowed to flow freely so as not to constrain the thought process of the participant or the flow of alternative explanatory ideas. Interviewees numbered ten (representing approximately 5% of the organisation within the locality) and were sampled opportunistically so as to be distributed proportionally across the levels of seniority in the Company. The interviews were conducted in private meeting rooms at OGCom and during a three-month period at the beginning of 2017; the distribution of dates being driven by availability of interviewees and the RE.

Preliminary plans for the second, quantitative stage were established at outset of mixed methods Stage 1 and then later refined based on Stage 1 data analysed.

Stage 2

Mixed methods Stage 2 was designed to substantiate the observations of Stage 1 quantitatively, and also to test the generalisability of the findings by gathering data from other companies and industries.

The quantitative stage used an online questionnaire to gather quantified data from responders from (a) the host company, (b) two other companies working within the same industry and business model and (c) groups of organisations within three other sectors: education (primary and secondary schools), medical (various NHS) and recruitment. These sectors were chosen opportunistically on the basis that the RE expected to be able to gather data via personal connections, but they were also expected to serve the exploratory purpose of amplification of effects given the substantial differences between the industries.

The questionnaire was deliberately kept as short as possible to maximise the possibility of getting meaningful responses from as many people as possible. It asked the responders to consider the group within the company with which they identify most closely (i.e. department, project, discipline etc.), and to estimate the number of people in their organisation, their office/site/location and their group. It then asked responders to score a range of different motivating factors (with the guidance that this is about motivation whilst at work), including a number that serve the individual, a number that serve the organisation, and a number that serve the group. Responders were also asked to score the likelihood of their undertaking a range of activities in the interests firstly of the group, and then the wider organisation.

A number of opportunities were provided for responders to augment their scored answers with qualitative comments. This was to allow themes to be corroborated/reinforced, to help explain any conflicting data between the two stages, and to allow alternative theories and/or explanations to emerge.

The questionnaires were distributed via a “facilitator” in all cases apart from OGCom, where the RE approached responders directly. The facilitators were all employees of companies in the target groups and were asked to enrol a cross-section of co-workers to complete the questionnaire. The questionnaire was hosted on SurveyMonkey⁵⁰; links to the questionnaire were emailed to responders via the relevant facilitator.

Responses were gathered between September 2017 and March 2018; the duration reflecting the difficulty of chasing up incomplete answers via the facilitators. The indirect nature of the approach also prevents identification of the proportion of people approached who declined to participate. Total responses numbered 103, of which 11 (10.7%) were incomplete.

4.2.3. Phase 2 Measurement

Measures from both research stages were designed to respond to questions phrased “to what degree are you motivated by...” in order to facilitate consistent interpretation and triangulation of qualitative and quantitative responses.

mixed methods Stage 1 interview data was coded according to a number of questions that either arose from the action research phase or at least remained unanswered (e.g. how the participant understands “organisational learning” in relation to the learning subject). The coding of answers was relatively simple because the semi-structured nature of the interviews had allowed clarification or expansion of interviewees’ positions on key subjects.

The mixed methods Stage 2 questionnaire was designed to assess motivation levels to support different level entities defined (individual, group, organisational) using measures adapted from “Calidad de Vida Profesional” (Quijano *et al.*, 1997). Strength of agreement with statements were evaluated using nine-point⁵¹ and five-point Likert-

⁵⁰ <https://www.surveymonkey.co.uk/>. Accessed 16th June 2018.

⁵¹ Effectively a five-point scale but allowing between-score values to be used (i.e. 1, 1-2, 2, 2-3 etc.).

type scales. The responders were also asked the degree to which they endorsed a range of options for motivational drivers for their activities within their organisation, with responses again measured by Likert-type scales. Relative measures were derived based on the scaled responses to allow comparison of the differences in motivation levels between responders from different companies and industries. This avoided the need for any absolute measure of motivation, which might otherwise have been difficult to control since there was no way of comparing baselines for the different contexts.

Control of questionnaire validity was achieved via the same steps as for the Phase 1 questionnaire; as described in Section 4.1.4.

4.2.4. Phase 2 Interpretation

The structure of mixed methods research does a lot to validate the data of both phases. As Hussein (2009) observes, combining qualitative and quantitative datasets provides an opportunity to “...*increase credibility of scientific knowledge by improving both internal consistency and generalizability.*” The sequential explanatory design is particularly strong in this regard since the second stage corroborates the earlier more subjective stage. Interpretation of interview data is notoriously susceptible to accusations of subjectivity. Coding of data is helpful in that it provides a framework for interpretation. Text excerpts are also used to support any trends or relationships observed. Contrary suggestions arising in the data are also reported to provide a balanced counterpoint. The main interpretive control measure however is whether the same trends and relationships can be discerned within the Stage 2 quantitative data.

Interpretation of the quantitative data was relatively invulnerable to interpretation bias since the relationships induced were only in terms of direction rather than magnitude, and there was little conflict in the data. Potential conflicts were pre-empted and addressed by inviting responders to record further comments (non-compulsorily) periodically through the quantitative survey. The differences between the responses

received from the different industries were the most significant unanticipated effects of the study. Additional information was sought from facilitators, as well as the comments received, to attempt to provide explanations.

Since the research was exploratory and inductive in nature, the validity of the exercise depends heavily on the plausibility of the theory developed and the degree to which it is able to explain all effects observed. The results are therefore presented as a series of logical arguments, each advancing a different strand of theory but each also complementing and interacting with the others. Generalisability has been maximised by considering the problems across different settings and contexts. It is noted however that the sample sizes used were limited and further deductive research would be required to confirm wider applicability of findings.

The RE's situatedness is acknowledged and considered relatively low impact overall, since the data collection techniques are relatively impersonal (and in fact for Phase 2 are distributed by others). Risk of bias is greatest within interview conditions where discussion may be influenced by RE opinion. In accordance with the exploratory nature of the study strong opinion is desirable, so efforts were taken (a) to talk around each topic, discussing all points of view until it was clear whether agreement or disagreement was emphatic or non-committal and (b) to report accordingly.

4.2.5. Phase 2 Ethics

There are no challenges to ethicality that are specific to mixed methods research but standard principles were applied to safeguard the confidentiality and anonymity of interviewees and responders; to ensure that they were comfortable with participation, not overly inconvenienced, and given adequate opportunity to withdraw and raise complaints.

A consent form was used during mixed methods Stage 1 to provide relevant information to each participant, and to record their understanding of research

objectives and conditions. Interviewees were informed that they were free to cease participation at any point and to whom any complaints about the process may be addressed (a nominated Company director with full knowledge of the research project)⁵². For mixed methods Stage 2, this information was distributed via the email which provided a link to the questionnaire. Sign-off was not requested since acceptance was reasonably inferable from responders' decision to follow the link.

Mixed Methods Stage 1 Interviews were recorded via Dictaphone and also interviewer notes but neither record was stored on Company systems and was treated as strictly confidential. Quotes are used anonymously, and only where the identity of the participant cannot be derived from the content

Stage 2 data was gathered via an anonymous online survey tool to which the RE had sole access. Sharing of sensitive data was kept to as low a level as possible; the questionnaire asked for the responders' names for tracking responses only. A statement assuring confidentiality was made in the invitation to participate. Again, data was stored securely and anonymously, and only outside of Company systems.

⁵² No complaints were raised.

4.3. Results

This section provides a summary of the different datasets collected during the two research phases. Since they are not all relevant to the conclusions drawn, the results themselves are appended to the thesis (locations signposted below) and invoked as appropriate in the four discursive chapters that follow.

The sections that follow summarise the results delivered by the two research phases in turn:

4.3.1. Action Research Study

As described in Chapter 3, the data collected before, during and after the action research study falls into the following categories:

- Survey data
- HR data (e.g. training applications received);
- System usage data (e.g. number of log-ins, number of observations made);
- Observations (meeting content, Company bulletins and group emails, ethnographic data)
- Public data

The periodic (i.e. at the start and conclusion of each cycle of the action research study) survey was originally conducted on a sample group of 95 people chosen by a random number generator from the employees and contractors of OGCom's London office. Over the course of the research period, the numbers in the sample group reduced due to departures (51 people: accounting for 93% of the reduction in numbers) and also drop-outs (4 people: 7%); only 38 people participated in all four surveys. The data collected was mainly quantitative (as summarised in Appendix C: Table C.1) but the survey also included opportunities to insert comments and qualifications at the participants' discretion (as summarised in Appendix C: Table C.2).

The survey responses themselves were also occasionally disregarded (2%) where participants had (a) submitted the same score for all quantitative entries and (b) omitted to respond to all commentary fields.

Anonymised and non-confidential HR Data was gathered (with appropriate authorisation) to monitor the numbers and value of training requests submitted and approved each month. Other data provided comprised numbers of personnel applying to enrol in the periodically-run internal training programme, attending “learning lunch” internal briefing sessions, and using the Company online learning platform. Some of these metrics relating to training were effectively discontinued because the cessation of the training budget rendered them null (and meaningless). Company head count (employees and contractors) was also periodically ascertained from HR.

System usage data related to (anonymised) log in data for the Company online lessons learnt, QMS (quality/project management system) and SOS (safety observation system) platforms.

An observation log was maintained to gather information (opportunistically) that could provide an indication of the uptake of learning systems within the Company (particularly collective reflection), evidence the proliferation of Learning Organisation disciplines within common practice or provide insight into the underlying causes of any effects observed via other media. This was another field in which some sources of data became discontinued; for example, the practice of holding quarterly internal presentations on Company progress, that was expected to be a good source of data on the Learning Organisation disciplines, was stopped shortly after the industry downturn (discussed in Section 1.2.4).

Table 4.1 (overleaf) summarises the types of data collected, the metrics used and the purpose of each in demonstrating the intended outcomes. The data themselves are summarised (anonymously) in the appendices nominated.

Table 4.1 Summary of Action Research Results

Type/Method	Measure	Purpose	Comment	Appendix ⁵³
Survey	Perception of presence of Senge's 5 disciplines within Company (scored)	Dependent variable (emergence of Learning Organisation disciplines)	See Section 6.1	C
	Views on Company collective learning (scored)	"Indirect" learning measures	See Section 6.1	
	Job satisfaction (scored)	Monitoring background	See Section 6.1	
	Comments on all aspects	Qualification/clarification Understanding of trends "Indirect" learning measures	Used to identify and support the arguments presented in Chapters 5 to 8	
HR Data	Training requests	Dependent variable	Discontinued metric	D
	Training Attendance	Dependent variable	Discontinued metric	
	Headcount	Monitoring background	See Section 1.2.4	
System Usage Data	Learning platform data	"Direct" learning measures	See Section 6.1	E
	SOS platform data	Monitoring background/ comparison of system use	See Sections 1.2.4 and 6.5	
	QMS platform data	Monitoring background/ comparison of system use	See Sections 1.2.4 and 6.5	
Observation log	Meeting Content	Qualification/clarification Understanding of trends "Indirect" learning measures Dependent variable Monitoring background	Used to identify and support the arguments presented in Chapters 5 to 8	F
	Bulletins			
	Emails			
	Anecdotal information			
	Organisational change			
Public Data	Oil prices	Monitoring background	See Section 1.2.4	N/A – See Figure 1.2

⁵³ Summaries/overviews showing the extent of the data collection and interpretation processes are provided rather than the raw data, which are held confidentially.

4.3.2. Mixed Methods Study

The data collected during the qualitative phase consists of a series of records of semi-structured interviews which were then coded to identify common threads in responses. In some cases this was nuanced in that affirmative responses to the question of whether the Company was considered a Learning Organisation were differentiated on the grounds that they were based on differing definitions of the term.

An overview of the data collected is provided in Appendix G.

Quantitative phase data took the form of the cumulative responses to an online survey with a sequence of Likert-style scale scores (as well as a number of fields provided for additional comments/clarifications to be made). A number of responses were partially incomplete, but there were no disregarded entries as all entries were suitably varied and appeared to be based on suitable consideration.

A sample of the data collected relating to Industry 1 (oil and gas engineering consultancies) is provided in Appendix H.

4.3.3. Data Assembly

The four chapters that follow each advance a distinct argument for a particular development in organisational learning theory drawing from both the analysis of the existing literature (see Chapter 2) and specific aspects drawn from the datasets summarised in this Chapter (and related appendices). This theory building exercise resembles and borrows from grounded theory methodology but since the data were not collected with this approach in mind it is not presented as such. Nevertheless, each argument is based on themes that are recurrent through the datasets, and each pursues the grounded theory goals of fit, relevance, workability, and modifiability (Glaser, 1998). The process is therefore appropriate to the development of novel, inductive theory.

4.4. Summary and Conclusions

This chapter began with a discussion on research philosophy/paradigms compatible with social science, and more specifically with organisational learning research. Action (Baskerville and Myers, 2004), design-based (Andriessen, 2006; Kolmos, 2015) and mixed methods research (Burke Johnson and Onwuegbuzie, 2004) are predominantly based in a pragmatist philosophy. Giddings and Grant (2007) however argue that pragmatism is “...an ideological position available within any paradigm rather than a paradigm in its own right” and report a strong alignment between post-positivism and mixed methodologies. Moreover, as Howe (1992) points out, the alignments between certain methods and philosophies are marriages of convenience and not requisites for academic advancement. The conclusion was drawn that a post-positivist stance best fit the planned study which is well aligned with the exploratory nature of the research exercise as a whole, and with the application of dialectic logic in particular.

Research designs for Phases 1 and 2 were selected based on their suitability for exploration of the specific research questions posed. For each design, or combination of designs, the relevant tenets were considered and combined, and incorporated into plans that were methodologically rigorous (as defined in relation to the methodologies applied).

The data gathered from the two research phases combined to provide insight on a number of distinct but related threads within the topics of study; these are detailed in the chapters that follow.

Part 3 – Foreground

5. Outcome 1: The “Lemniscate” Learning Model

This chapter draws a series of observations from the two research phases and the key findings of the literature reviewed in Chapter 2 and constructs the argument that there are significant gaps between organisational learning theory and practice. The main failing of existing models is a failure to recognise that, unlike individual learning, it is not a simple-cyclic process. The effort for each learning stroke must come from a number of different sources because of the difficulty of involving the whole organisation with reflective tasks. Moreover, organisational change must be ratified and guided to align with the overall strategy of the organisation. A novel model is developed to address these anomalies that the RE submits as a significant and necessary progression from the state of current (and historic) theory. The term “lemniscate” is used to term the model as it reflects its approximate shape and is helpful to differentiate the proposed model from the many already discussed.

Like many of its peers, OGCom operates a “lessons learnt” system that allows users to raise and record ideas occurring and observations made in relation to a particular project or business activity. Historically, lessons were logged on a project-specific register as part of the close-out process at the completion of the contract and stored in the relevant project file. This meant that to review applicable lessons learnt previously to benefit a newly commencing project (as was required by project initiation procedures), comparable projects would have to be shortlisted in order to determine which might have suitable learnt material. This system further implies that:

- a. No organisation-wide action was taken as the result of a lesson having been raised, and consequently;
- b. The recording of lessons was considered sufficient for them to be considered “learnt” by the organisation.

This aligns with a key finding of Duffield and Whitty's (2015) research in that they find identification and recording of lessons to be commonly practiced, but dissemination and application of lessons far less so⁵⁴.

These impairments were recognised by OGCom and a central, online database was established to provide a common-access system; as is recommended by McClory *et al.* (2007). The database was set up in such a way that lessons recorded in relation to a particular project were also identified by relevant technical or management discipline. A discipline "owner" or subject matter expert was nominated for each area, and lessons can be escalated to the attention of this owner for further investigation, action and ultimately closure. The system as a whole also has an owner with full visibility of the progress of all lessons and the authority to intervene with or override organisation-level decisions taken as a result.

With this functionality, the system effectively addressed the two challenges identified by Wijnhoven as common to such platforms: that integration of lessons with pre-existing knowledge and also removal of "obsolete" material are potentially problematic (Wijnhoven, 2003). The OGCom system allays both issues with the use of a common discipline expert or experts to pursue any observations considered actionable to closure. Those observations deemed of insufficient interest to the wider organisation can be closed with no action. Theoretically then, once a lesson is actioned it need not appear in a review of relevant lessons (or database search by keyword or discipline) because it has already been incorporated into organisational practice.

McClory *et al.* (2007) and Duffield and Whitty (2015) provide examples of existing guidance for the establishment and operation of lessons learnt systems, and note three distinct phases as generally common to all:

⁵⁴ On which point Duffield and Whitty also site Duhon and Elias (2008), Keegan and Turner (2001) and Williams (2007).

1. The review of relevant lessons at the outset of a project.
2. The recording of lessons of potentially wider interest during the course of the project.
3. The review and reporting of lessons during or on completion of the project.

The use of a common database enables the logging and escalating of lessons in real time (Phase 2) which is beneficial because it helps to counter the effects of project resources thinning as it draws to a close and before lessons have been reviewed. It also allows the organisation to benefit more immediately from any observation or idea raised; rather than wait for project closure. Barnes (2011) and Williams (2007) warn against an over-reliance on computer-based systems, to which the OGCom system architects would respond that the technology only really provides the storage and search aspect, and the raising of lessons to the relevant discipline leads. All other processes are driven by people, and those people can choose to involve as many others as they see fit. In fact, a monthly forum existed for senior project managers to collectively review and discuss specific lessons raised by colleagues.

The OGCom system was observed in operation throughout the Phase 1 research period. Lessons were raised in some cases as they arose and in others at project close-out. The database was used to store and raise the lessons to relevant parties for review and organisational-level action as required. Changes were made at an organisation level for some observations, but only for those considered to be of value to the organisation by the relevant reviewers. These examples serve as a basis for comparison of learning practice with Kofman's OADI cycle⁵⁵. In practice it was found that behaviour deviated irreconcilably from this basic pattern, suggesting an altogether different model to describe the collective case. The steps that lead to this conclusion and the model proposed as a response are described in the sections that follow.

⁵⁵ See Section 2.2.1 and in particular the paragraphs preceding Figure 2.10.

5.1. Observation 1 - The division of labour

As Table 2.3 illustrates, the stages of Kolb's (1984) ELT cycle resonate throughout organisational learning theory with a regularity that is difficult to overlook. Whilst the steps of the different models are similar, the comparison is not entirely seamless and some terms used are better fits for the organisational context than others. It should also be remembered of course that it was not organisational learning that Kolb set out to portray.

The steps of Kofman's OADI cycle (Kim, 1993) have the advantage of being expressed in clear and intuitive terms (Figure 5.1) and are generally a better fit for organisational reality. These steps (observe – assess – design – implement) were therefore used as the basis for identification of a Kolb-esque process in OGCom during Research Phase 1, and they are used throughout the rest of this thesis to denote the stages of the Kolb-esque cycle.

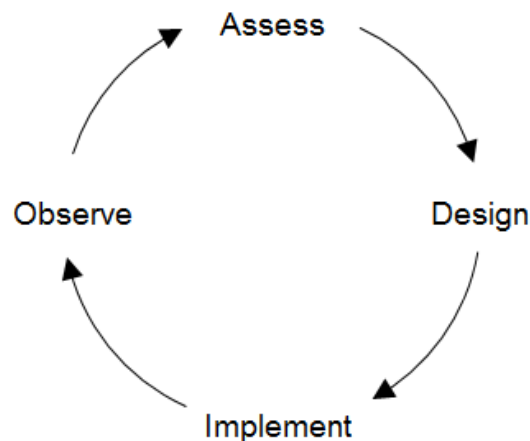


Figure 5.1 Kofman's OADI Cycle (Kim, 1993)

One aim of the action research study was to observe the Kolb-esque OADI cycle in operation in an authentic setting (RQ1.1). In practice within OGCom, however, observation of the learning process revealed some inaccuracies and gaps in the OADI process. Whilst it was true to say that each of the four stages was discernible in operation (as discussed in Section 6.1) during a successful learning exercise, there

are a number of ways in which learning departed from theory:

1. As suggested by Dixon (1999), the steps of the cycle are not conducted by the same entities. Within the host Company, observations are generally made by individuals or groups at any and all levels within the structure, assessment occurs both at source (by the observer) and at a senior management level, design (of appropriate action/response/change) is a senior level function, and implementation is a cross-level activity with decisions and instructions being issued top-down, and alterations to practice enacted at ground level. Implementation in fact must involve the wider organisation or no change in collective behaviour will take place.
2. Whilst a coherent cycle is in evidence, level of participation is stunted. This might be the result of a number of factors but a difference in motivation level to support organisational learning (compared to individual learning) was identified as a key contributor during research Phase 2 (see Chapter 6).
3. The process did not lead reliably to change in organisational behaviour.

The implications of these qualifications for model design are discussed below.

Steps of the Cycle

The organisation undergoing experiential learning draws lessons and improvement from the collective experience. For a large organisation (as opposed to a group), the collective experience is rarely shared experience, since the members are distributed geographically, departmentally and by discipline. The source of the lesson is the pool of observations/ideas occurring to the members as they carry out their individual roles. Contributors to the pool may include upper tiers of the organisation and senior management, but the point is that the raw material for organisational learning comes from the individuals. This is synonymous with “Observe” in the OADI cycle but it is re-labelled “Experience” herein to reflect that it is not a passive activity.

Somehow the organisation must collate this raw material and determine which items can be made useful and which cannot; this is what OADI labels “Assess”. Whilst it is the case that the individual undergoing the experience in question must assess its wider value, an organisation in which every individual has the authority to unilaterally implement change in process or policy is (a) likely to display little or no common behaviour and (b) potentially unmanageable. Logically then, there must be a role within the organisation with responsibility for evaluating the mined material and deciding which has the potential to be useful.

The OADI “Assess” is therefore divided into “Assess” and “Evaluate”; the former being a function of the individual and the latter being a management function. The individual assessment remains important however, because an organisation in which every experience of every individual is flagged for evaluation will be swamped in raw material. The individual must filter their experiences for potentially useful content, before a representative of the organisation’s management executes a second filtration process.

The flow of learning material is now somewhat narrower, having been twice filtered. The next OADI step is “Design” followed by “Implementation”, both of which are left unaltered. It should be noted that they remain under the control of the management of the organisation, who may or may not choose to involve the recipient of the original experience and/or selected colleagues in the processes. There is evidence to suggest that such involvement enhances the outcome and success of the process (e.g. Park *et al.*, 2015) but it is not necessarily a prerequisite. As with evaluation, collaboration with the entire membership of a large organisation on the design of an appropriate organisational learning response is infeasible.

The OADI cycle returns to “Observe” at this stage. The subsequent section discusses the accuracy of this closed cycle at length; for now, it is important only to note that observation has been established as an individual and non-targeted process. The

organisation management, having implemented some change, will necessarily be involved in the tracking and further assessment of the efficacy of the change made. For this reason, a sixth step “Monitor” is included at the “end” of the cycle. It may be the case that the monitoring leads to adjustment of the change or further observation, but in this case the cycle is effectively invoked afresh (approximately).

The OADI cycle has therefore been amended as follows to reflect more accurately the different tiers of involvement required:

- **Experience** – function of the individual (member)
- **Assess** – function of the individual (member)
- **Evaluate** – function of management (or led by management)
- **Design** – function of management (or led by management)
- **Implement** – function of organisation
- **Monitor** – function of management (or led by management)

It is notable here that there is only one activity undertaken jointly by the organisational membership (Implement). Other actions are taken by all members acting independently or possibly in groups (Experience, Assess) and by management-level representatives (Evaluate, Design, Monitor); not the organisation as an entity. It is the Implement stage that makes the organisation the learning subject. It should also be noted that Implementation may well be executed in stages, using a pilot group or groups as guinea pigs before a wider roll-out occurs.

It is not a focus of this research to explore or comment on how the execution of each of the functions may be optimised. Ultimately learning from experience requires experimentation, and experimentation carries a risk of failure. “Bad”, or at least inopportune conclusions or decisions may always occur because the full impact of any organisational change made in the name of learning is all but impossible to predict, and may in any case unfold over a long period. A “good” learning process should seek

to manage or minimise the risk of such misfortune or mistake so that it is commensurate with the degree of benefit that may be delivered. This might be achieved by including appropriate peer review processes for major decisions; by using pilot groups to test changes; or by involving experts in organisational management and change in certain stages of the process.

5.2. Observation 2 - Learning as cyclic

A key difference between individual learning and the organisational equivalent is that in the former, the same entity has entire autonomy over interpretation of feedback (Observe, Assess) gathered and also over experimentation (Design, Implementation). In a relatively short space of time, it is possible for the individual to try a new activity, attitude or approach (say) and then iteratively refine that approach on the basis of subsequent perceived success or failure. The organisation is (necessarily) far less quick to respond as it must be more cautious in interpretation and experimentation takes longer to effect.

For the individual, a closed cycle is reasonably accurate as a description of learning. However, there is a temporal and progressive aspect that is not reflected, since there is a change to the individual (or more accurately its behaviour) between any particular stage and the subsequent iteration of that stage. This does not model easily in two dimensions but might look something like the illustration shown in Figure 5.2 (the right-hand version of which shows multiple overlapping cycles as previously noted in Section 2.2.3).

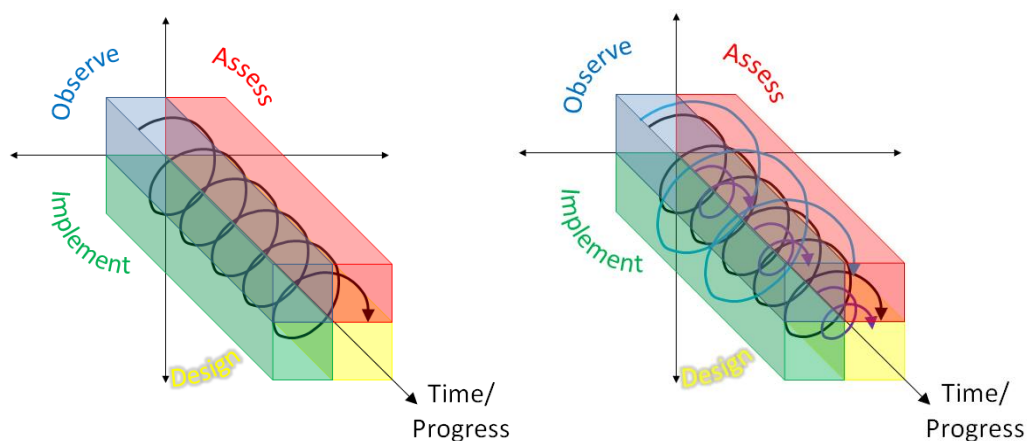


Figure 5.2 Temporal/progressive OADI Cycle

The two-dimensional cycle mode effectively views this spiral “end-on” along the temporal axis. Alternatively, a two-dimensional spiral can be used to represent the

same missing dimension as featured in the SECI model (Nonaka, 1991) shown in Figure 2.9. Again, this imagining is a reasonable approximation in the case of individual learning, since the cycle is effectively continuous and all actions are performed by the same actor. For the organisational case, the collective behaviour is not so easily re-routed, nor are the actions common to the same entity/entities.

Within OGCom, learning activities (i.e. the stages of the cycle, observed with the aim of investigating RQ1.1) were conducted “offline” from the main thrust of company activity. As noted in the previous section, meetings held to review lessons learnt and associated actions involved relatively small groups operating out of view of the majority of members. The point at which designed changes were introduced to collective behaviour was effectively at the end of the learning cycle. Changes arising from lessons were not typically immediate and took time to roll out and other lessons resulted in no specific changes. There was a clear disconnect between what could be called “business-as-usual” activities (that generated the observation stage of the cycle) and dedicated learning activities. Moreover, since changes made were sporadic and slow to take effect, the business-as-usual pattern did not undergo constant adjustment and improvement; rather it changed in a step-wise fashion, out of synch with the learning cycle.

One way of acknowledging this separation is by providing a separate cycle for each set of activities, each feeding the other in an approximate “lemniscate” pattern.



Figure 5.3 Twin cycle (‘lemniscate’) process

“Loop 1” represents the relatively static but also cyclic continuing business of the organisation. “Loop 2” is the process of organisational learning which springs from, and returns to influence, Loop 1 business. For completeness this arrangement is shown in Figure 5.4 with a temporal/progress dimension added. The regularity of this diagram is misrepresentative of reality, where cycles will take different lengths of time, start and finish more sporadically etc. The illustration demonstrates that the temporal aspect is not overlooked but can be left unstated without compromising the model.

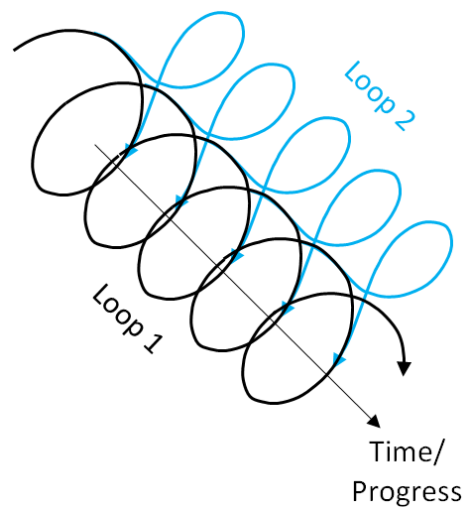


Figure 5.4 Temporal/progressive “lemniscate” process

This proposed separation, mirroring organisational learning as it does more accurately than a single, closed cyclic process, is alluded to within the literature. Dixon (1999), for example, defines organisational learning as “...*the intentional use of learning processes [(effectively Loop 2)]... ..to continually transform the organisation [(effectively Loop 1)]...*”. Moreover, the separation is important because it shows that organisational learning as neither the primary function/business of the organisation nor entirely isolated from it (as a learning cycle with no mention of practice would appear).

5.3. Observation 3 - Training vs. learning

Opinion on whether the Company could be considered a Learning Organisation (as gathered during mixed methods Stage 1 in pursuit of RQ1.2) was divided⁵⁶ but so too, as observed in Chapter 2, is opinion as to how the term is defined. The slightly more prevalent view found amongst interviewees was that the term concerns to the regenerative type of learning required to replace experienced people with their juniors (over time). For example, it was considered to be:

“Picking things up as you move through... ..learning on the job”

“Learning from within... ..or when the Company sends people on courses”

And:

“...trying to make sure experiences are not lost.”

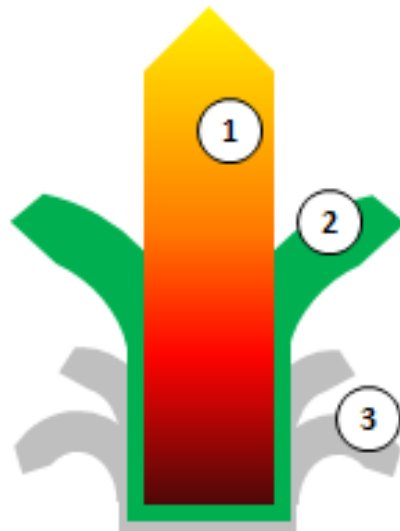
As discussed in Section 2.1, the learning “subject” in these training scenarios is the individual rather than the organisation; an interpretation that has been rejected herein as incompliant with organisational learning. If organisational learning involves the organisation as a whole (or the majority at least), it follows that individual learning activities within and relating to the organisation that do not result in collective behavioural change do not qualify. These activities are nevertheless important because they contribute to the normal operation of the company, and therefore to the interactive experiences from which learning observations may be drawn. It is helpful to draw a pragmatic distinction within the total learning effort expended jointly and severally by the individuals of the organisation; between learning activities that maintain, and those that develop the nature of the collective entity.

To illustrate this point, the individual learning case is considered, and a system of three divisions is proposed (see Figure 5.5) as follows:

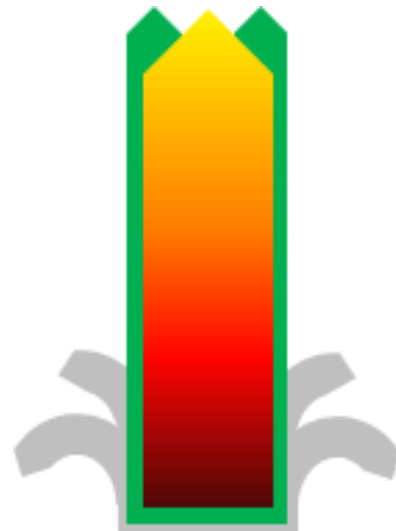
⁵⁶ On the question of whether the Company should be considered a Learning Organisation, the majority of answers were negative or unenthusiastic.

1. Successive Learning
2. Tangential Learning
3. Extraneous Learning

Un-targeted tangential learning



Targeted tangential learning

**Figure 5.5 Categorisation of Individual Learning**

Successive Learning accounts for the majority of learning content during employment for each individual. It encompasses all training, coaching, and gaining of experience necessary for the individual to progress to more senior roles/responsibilities within the organisation.

Tangential Learning is the useful learning that is gained in pursuit of successive learning that is not aligned with the normal business/practice of the organisation. This could be experienced gained on a project that includes an element not normally targeted by the organisation, say, or observations made that could improve organisational processes; anything that does not perpetuate the existing business directly but it potentially usefully related. Tangential learning can be harnessed by the individual, in the event that they use a particular proficiency to change role or take on new tasks (as represented by the right-hand diagram in Figure 5.5).

Extraneous Learning is included for completeness as a category of learning that is non-useful to the individual (and organisation). This might be incidental learning about

something too far removed from the intended career path of the individual, or inconsequential observations too minor to affect practice.

These distinctions can be extended to the organisation level as shown in Figure 5.6 below. It should be noted that the organisation is shown by implication as vaguely hierarchical but this is only to simplify the representation.

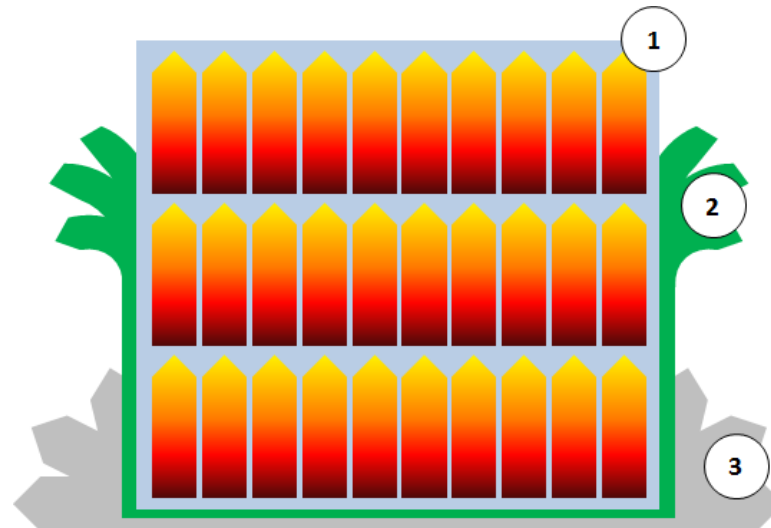


Figure 5.6 Collective Learning Categorisation

At an organisational level, it can be seen that the net Successive Learning effort (1) is spent maintaining a certain level of competency within the organisation; each member progressing as their experience increases to fulfil the subsequent role/experience level in the structure. The representation is simplistic of course, as in practice people will develop at different rates, some will plateau and others will leave, join or retire. The key point however is that the exercise as a whole, represented by the pale blue box, is effectively static (hence the flat-topped box rather than an arrow); or would be so if only Successive Learning was taking place.

The organisation does not, in theory, learn anything new in the course of training and replacing old members with new. As Smith and Sharicz (2013) put it:

“Although fluid self-organizing networks are the natural state for humankind, in most organizations “organizing” entails the process of autopoiesis.”

The net Tangential Learning effort (2) available to the organisation is shown here outside the blue box as a disparate and randomly diverging set of arrows. As with the individual case, this can potentially be put to work for the organisation but it is harder to maintain an overview of the content and opportunities for growth therein.

Extraneous Learning (3) is again included for completeness.

The second key point is that if an organisation wishes to learn, it is the net Tangential Learning resource that can be channelled (as represented schematically in Figure 5.7); and this resource only.

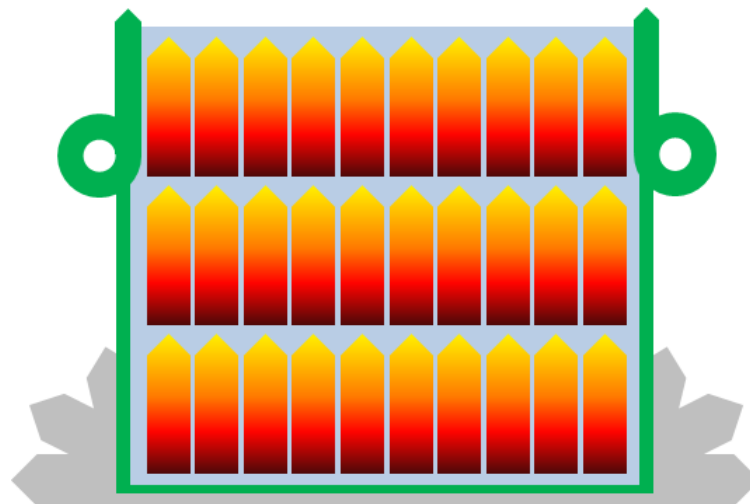


Figure 5.7 Tangential Learning Made Gainful

This is an illustration of the challenge the would-be learner organisation faces. It must sift, select, organise and channel the by-products of experiential learning into something useful. It may augment the knowledge/skillset accumulated by further recruitment, investment in software or hardware, training etc., but to learn from cumulative experience it must work from the outset with a distributed resource, and actively mine that resource for useful material.

This classification is entirely artificial, and examples may well exist of scenarios that span the dividing lines tentatively drawn. It is nevertheless a pragmatic distinction, because it allows a line to be drawn between organisational learning on one side, and what could be termed “organisational training” on the other.

5.4. The “Lemniscate” Model

The model shown in Figure 5.8 was developed during the course of the research to “solve” the complexities identified. It is proposed as a logical and pragmatic synthesis of the key aspects of organisational learning theory as well as relationships induced from novel results.

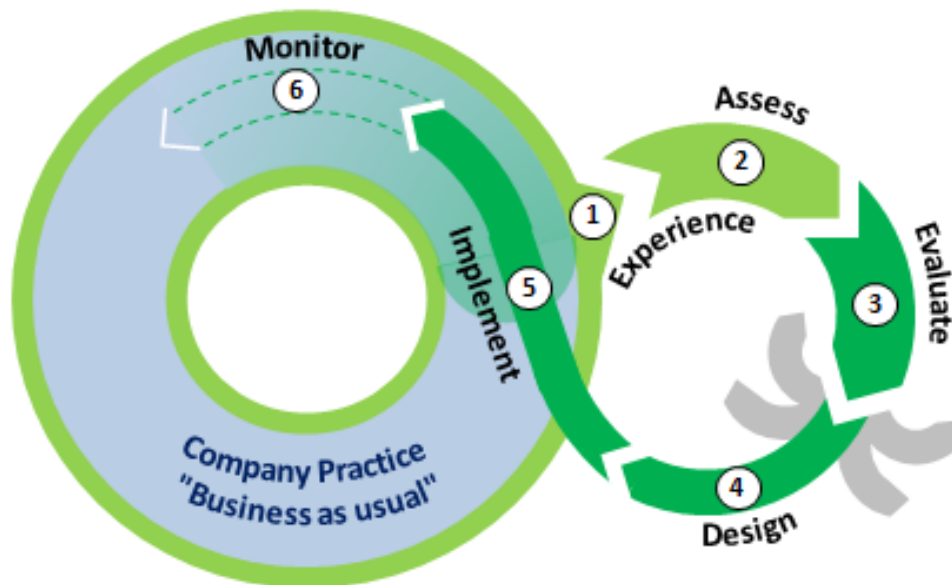


Figure 5.8 “Lemniscate” Organisational Learning Model

Firstly, and most obviously, the model follows the “lemniscate” shape tabled in Section 5.2. The business practice of the organisation is represented by the blue loop on the left; this is effectively equivalent to the light blue box shown in Figure 5.6 and Figure 5.7. It appears as a loop in recognition of the fact that it is a generally cyclic process because any organisation has a purpose and that purpose is an axis of habituation. The steps or stages of this cycle are specific to the organisation and are not in fact important to this model. They do not need to show the process of organisational training, although this activity would qualify as a sub-process.

What a successive learning cycle might look like in practice is speculatively shown in Figure 5.9. An organisation may or may not have an established system for dealing with this kind of training but any system, formal or informal, is likely to work by

identifying or (ideally) anticipating and subsequently filling gaps in collective competence. These steps are not included in the “lemniscate” model (Figure 5.8) because (a) organisational training is only a subset of what the organisation does, and the loop is intended to represent organisational practice as a whole, and (b) they are not requisite for the cycle to operate. Instead the unqualified blue ring is used to allude to the many cyclic activities and disciplinary practices that constitute “business as usual”. Whilst this appears to suggest that “business as usual” is static, in reality it is often subject to change as a result of the second, right-hand, organisational learning loop in the “lemniscate” diagram.

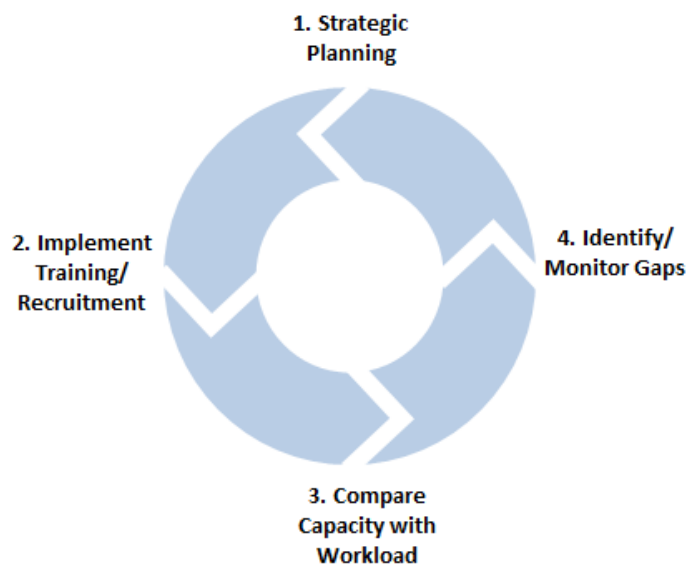


Figure 5.9 Speculative Organisational Training Cycle

Bordering the blue ring inside and out is the “Tangential Learning” material generated throughout the “business as usual” cycle. Where this is shown branching off to the right, the first step of the organisational learning process begins. The process shown is as concluded in Section 5.1; comprising the six steps of the modified OADI cycle: (1) Experience, (2) Assess, (3) Evaluate, (4) Design, (5) Implement and (6) Monitor. As these steps are followed, the outcomes feed back into the “business as usual” loop, introducing a hint of colouring to represent a shift in organisational practice. A number of further details are highlighted in Figure 5.10 and explained below.

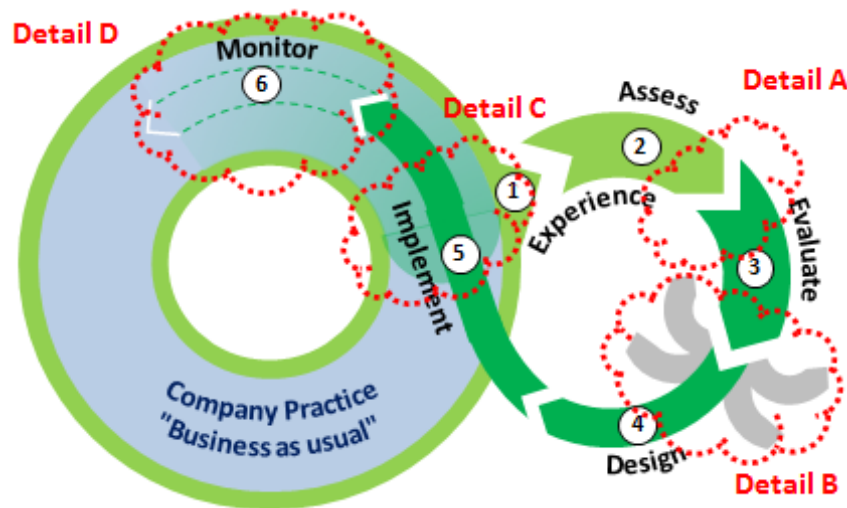


Figure 5.10 “Lemniscate” Organisational Learning Model - Details

Detail A

The individuals or groups have tangential learning experiences; they assess those experiences (or the resulting observations and/or ideas) and conclude they are worth submitting for higher consideration. At this point, the process hands over to a different entity, symbolised here by a darker green. “Evaluate” is where the management-level function takes the lead in the process, but not necessarily to the exclusion of the individuals/groups previously involved. Detail A signposts this transition.

There is a subtle difference in the wording (“Assess” vs. “Evaluate”) not only to differentiate between the two stages, but also to give to the latter process a dimension of determining value. The individual/group assesses the idea in isolation; i.e. is it worth something? The management-level must then consider (a) how much it is worth and (b) whether it is of greater or lesser value than other logged material.

Detail B

At the conclusion of the “Evaluate” process, the management-level entity effectively filters the material of sufficient value from the remainder. The non-valuable material is discarded as “extraneous learning” (as defined in Section 5.3), although it could perhaps be stored for re-consideration at a later stage. The grey arrows shown in Detail

2 are abandoned in illustrations of the model hereafter and the filtration process is symbolised instead by the narrowing of the flow of material around the learning loop.

Detail C

Those valuable ideas that survive the filter are then converted to useful, and collective, action via the “Design” and “Implement” stages. Here the organisation, led by its management function, considers the appropriate change in practice that the lesson suggests, makes plans and allocates resources. Implementation will involve whatever steps the architects of change can imagine, for example the writing or re-writing of procedures, training, purchase of hardware or software, hiring, re-structuring etc. It may involve pilot schemes before being shared more universally, or it may be subject to organisation-wide roll-out.

Detail C shows the implementation process feeding back into and altering organisational practice; illustrated as a gentle alteration of the colour of the “business as usual” loop. The change may be radical or minor, but in practice the majority of changes will be limited to particular aspects of organisational activity.

Detail D

Following implementation, monitoring must take place to determine, if nothing else, whether time and effort were indeed well spent. In the individual ELT learning loop, active experimentation feeds the following iteration of concrete experience. At the organisational level, there may be some delay between the registering of an idea and the implementation of the changes it catalyses, and as noted these activities are led by different entities. Any observation made post-implementation is made as part of a deliberate, targeted feedback process and not a via the “Experience” stage of the learning loop. It should be noted however that this does occur indirectly where a change to business practice spawns further observations, but again there may be some delay in between.

5.5. Non-destructive Testing

A number of other challenges arising within the literature, either as general principles or as criticisms of organisational learning models, are considered as a final theoretical sense-check of the “lemniscate” model. For example, Huber (1991) identifies a number of impracticalities of organisational learning in general, including:

- That the interpretation of experience and forecast of organisational benefit are subjective;
- That “silos” in place separating organisational groups may impede the spread of learnt material;
- That feedback on changes implemented may be distorted or misinterpreted.

The accuracy of the organisational learning model is tested not by its ability to solve these problems; but by its capacity to model them, as by doing so it demonstrates its affinity with real-world, observed issues. Huber's challenges reflect imperfections in the functioning of the "Design", "Implement" and "Monitor" stages respectively, as shown in Figure 5.11.

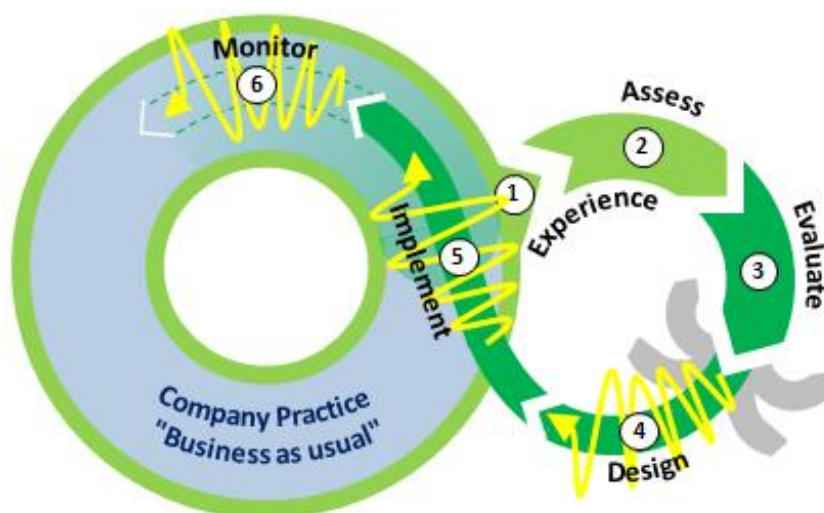


Figure 5.11 “Lemniscate” Model Impaired

The ability of the organisation to respond to these challenges is determined by the degree to which it understands the importance of allocating each step of the cycle to

the most appropriate entity, of establishing robust and accountable methods/mechanisms for carrying out each, and of ensuring that the entity in question is suitably motivated to deliver a beneficial outcome to the organisation. Subjectivity of process cannot be escaped (as observed by Langemeyer, 2006); it must instead be embraced as an inherent limitation and mitigated by peer review and corroboration.

A limitation identified of Nonaka's (1991) SECI model is its failure to identify the source of the learning/learnt material. This is also echoed in Kim's (1993) critique of March and Olsen's (1975) cycle of choice which notes that the model allows only for learning material to originate externally. The "lemniscate" model shows the learning loop commencing with observations and ideas that are generated in the course of "business as usual", covering both internal interactions and those with the outside industry. There is a suggestion that organisational activity of some sort is therefore a pre-requisite, but this pre-condition is inherent from the definition of organisational learning adopted ("*...a relatively permanent change in collective behaviour due to collective experience...*"; Section 2.1.1).

Rückriem (2009) charges Engeström's (1999) Expansive Learning Cycle with creeping obsolescence in a world of developing technology and social process. The "lemniscate" answers this charge by being entirely flexible to the specific mechanism(s) used to perform each function and urging each organisation to consider both how and under whose remit each step should be completed as appropriate to its own idiosyncratic characteristics and objectives. This is discussed at greater length in Chapter 9, where the practical application of the model and implications of the underpinning ideas for best practice and learning culture are explored. No model can be entirely future-proof, but uncertainty can be managed by maintaining intrinsic flexibility.

Another challenge raised in relation to Engeström's work, although with far wider applicability, comes from Young's (2001) review which asks whether the cycle can be

harnessed for specific, targeted learning as well as experiential. This is indeed a good challenge, but it crosses a disciplinary boundary within the body of theory since it asks how new knowledge can be deliberately acquired, rather than how knowledge acquired incidentally can be put to use. It is also a question that is commonly asked in individual learning theory; how can the “natural” learning processes be used to enhance targeted educational processes and systems? The possibility is considered herein, but it is again deferred to Chapter 9 (Application and Implications).

One critique raised by the RE in relation to the body of literature in general is to what degree any model or process should be assumed to be generalizable beyond the context in which it was conceived? Each model reviewed appears to be tabled as cross-contextual since no mention is made to the contrary. The concern is raised that a process observed within an organisation of a certain size, purpose and business context may be entirely inapplicable to another of different characteristics. As with future-proofing, an inherent flexibility may be used to allay some of this concern. Far greater confidence may be achieved by field-testing the model in a range of very different settings; this is exactly what was done during Research Phase 2 and the reader is therefore referred to Chapters 6 and 7.

Finally, an allegation made of a number of models, including that of Argyris and Schön (1978), is that they fail to adequately bridge the gulf between theory and practice. This criticism cannot be addressed with reference to the accumulated literature only. The model is tested instead against the observations made during Research Phases 1 and 2, collectively spanning three years of embedded organisational study. The chapters that follow include description of the ways in which the empirical outcomes support the model proposed.

5.6. Summary and Conclusions

The challenge of organisational learning is to develop a practice of transferring knowledge into value-adding activity (Ingelgård *et al.*, 2002). However, as Boyle (2002) advises, organisational learning must be a habit or disposition rather than a goal. It has been shown in this chapter that organisational and individual learning are processes that differ in ways that are subtle yet significant. For the organisation, the learning loop is a side-process to the business-as-usual continuum. This is necessarily the case in an organisation in which members are too numerous to be able to all participate in the reflective stages of the cycle.

The divergence of the learning path and the business-as-usual path also highlights the additional effort that has to be taken to perpetuate the cycle. Unless organisational development is a specific aspect of the role of the person/people responsible for a learning task, learning may become an “add-on” to their day-to-day activities. Members do not typically join organisations to drive learning; they more commonly join to align with the purpose of the organisation, whether it is an association based on employment, socialisation of some sort, religion etc. Learning can easily become peripheral to business-as-usual, and the question of how to motivate learning efforts is critical to creating habituation of learning (as the next Chapter explores).

Organisational learning has been found to be more complex than popular cyclic models show. The “lemniscate” model is proposed as a more accurate illustration of the process of organisational learning than the various Kolb-esque models. By delivering a greater level of realism, it provides a strong basis from which to consider and model the challenges to the development of organisational learning. Some such challenges have been portrayed using the model in this chapter; others are addressed in the three chapters that follow.

The key points made in this chapter are:

1. The simple and intuitive Kolb-esque cycle is an inadequate fit for the learning process of a large organisation, where it is not feasible to involve all members in each step of the process.
2. To even consider the process a closed-loop cycle is misleading, since any learning opportunity has a beginning and a conclusion of sorts, because multiple learning paths may be underway at once (rather than in consecutive stages), and because the start and the destination are not in the same “place”.
3. “Learning” activities that perpetuate the status quo by training members to replace other members do not result in changes in collective behaviour, and should therefore be considered distinct from organisational learning.
4. The “lemniscate” model is proposed to address and also describe these and other shortcomings (as discussed in Chapter 2) of traditional organisational learning models.

6. Outcome 2: The Motivation Gap

This chapter compiles evidence gathered and developed through the different research phases that builds a cumulative case for the critical role of motivation in actualising effective organisational learning. Whereas individual experiential learning can occur with little or no conscious effort, the same is not true of the collective case; nor are the benefits of participation direct or, in some cases, even visible. It is further argued that making participation mandatory is no substitute for genuine motivation, and that the issue does not appear consistently across all industries.

6.1. Observation 1 – System fails to pervade

The second initial Research Question (RQ1.2) predicted that the utilisation and uptake of an organisational learning system based on a Kolb-esque cycle would, once established, increase significantly and proliferate through the host Company. Although the various data showed a general increase in usage, it was by no means as dramatic as expected. This section summarises the data evidencing this muted response and elicits clues that suggest that the cause may be a paucity of motivation in individuals to support the common interest; at least to the degree that generates the additional effort required to drive continuous learning at the collective level.

As discussed in Chapter 3, a number of different metrics were used to monitor the usage of learning systems and the spread of general learning engagement through the Company. These were:

- “Direct” metrics; where utilisation of the steps in the OADI cycle was measured.
- “Indirect” metrics; those that are related to learning engagement but further removed by a level of interpretation or perception. These were:
 - Perceived efficacy of Company learning (assessed by Likert-style scale) by action research questionnaire participants.

- Comments volunteered by action research questionnaire participants relating to Company learning.
- Instances of Company learning observed by the RE via regular intra-Company communication channels (bulletins, team meetings etc.).

6.1.1. “Direct” Measures

Observations made (“O” of OADI cycle)

Monthly and cumulative “lessons” logged in the database are shown in Figure 6.1. It should be noted that the high input logged in April 2015 include those recorded by the researcher as an action research Cycle 1 intervention measure (see Section 4.1.3).

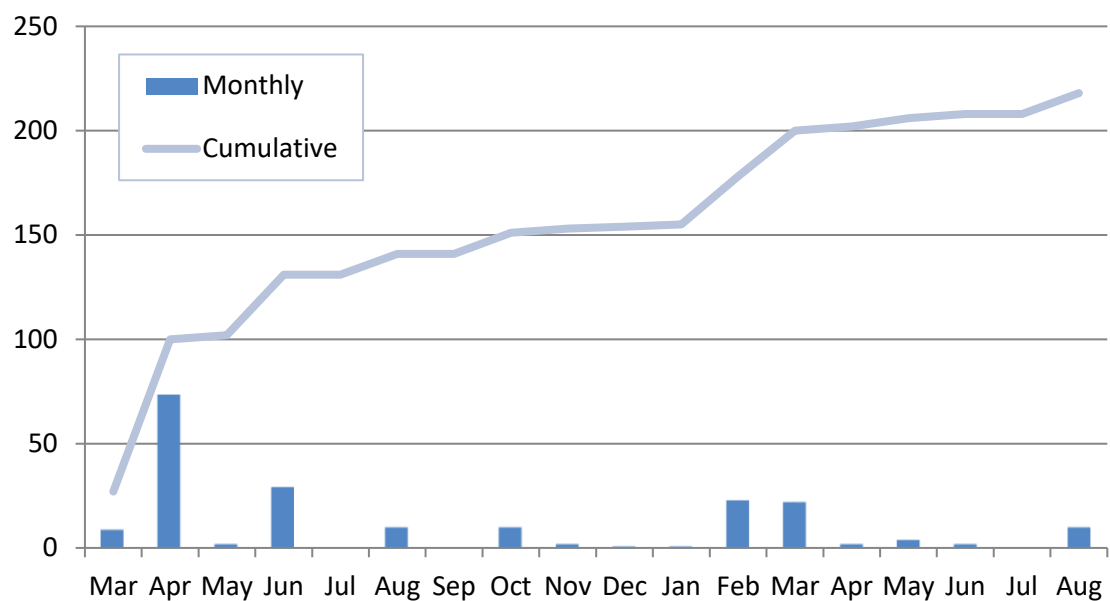


Figure 6.1 Monthly and Cumulative Lessons Logged

It can be seen that system utilisation increased overall during the period, but monthly input varied between periods of activity and inactivity. This is perhaps to be expected, since main upload will typically take place at project close-out and in one pass per project. It would be preferable to see lessons spread over the duration of the project because this would suggest that lessons are being logged as they arise (maximising potential impact). However, in practice holding a reflective review at project close-out also has advantages in that it can filter out any non-generalisable lessons.

The trend displayed here should be read as only a modest increase in utilisation. Whilst it is the case that personnel numbers reduced substantially within the research period, the lessons logged should depend more on projects run.

Assessment (“A” of OADI cycle)

The level (effort and number/seniority of people involved) of assessment and reflection entered into for any particular observation is difficult to gauge directly. Each lesson has associated and ideally generalised recommendations associated, but whether these are valid or practical may not have been vetted at entry level.

As a measure for the relative level of “assessment” taking place, the number of projects using the system, and therefore apparently conducting review workshops, is plotted in Figure 6.2. The “total” figure shown is also divided into “new” and “repeat” contributors (i.e. projects). It should be noted that the scale of projects is not captured in any way; a 100-manhour study from which one lesson arises is counted equally with a two-year, 50-person project.

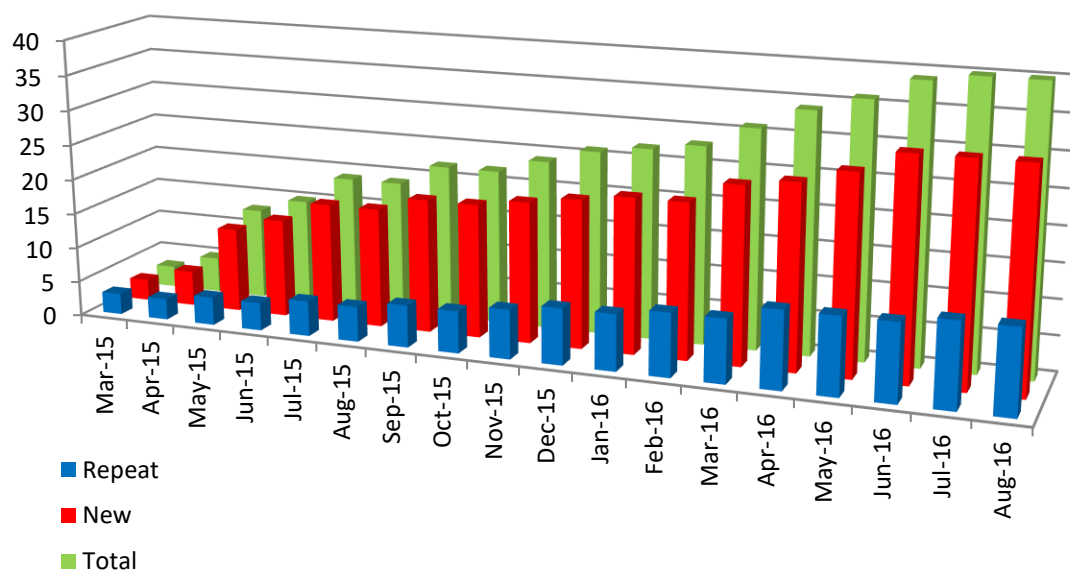


Figure 6.2 Monthly and Cumulative Projects Learning

It can be seen that the majority of projects booking are new to the system. It is not possible to scrutinise this further to see whether this is driven by certain key personnel taking the practice from one project to the next, or whether there is a genuine increase in participation. Moreover, such a comparison would be likely to fail since the length of projects varies and may exceed the research period.

Design/Generalisation (“D” of OADi cycle)

The process of lesson generalisation does not appear to have found a consistent platform/practice as yet. A number of different fora exist at which the impact of lessons and associated change in practice may be discussed, but it is not always easy to pin down the time and place where an action was decided, since:

- Multiple observations may lead to a combined action;
- Decisions are taken at different levels;
- Decisions not to take action may not be visible;
- Timeframes for agreeing action may vary with lesson content;
- The platform has no mechanism for “closure” of a lesson and associated action;
- There is no established practice for referencing procedural changes back to lessons that prompted them.

Discussion/generalisation of lessons has been observed to occur in the following contexts, some of which are newly arising during the research period:

- Project Management meetings.
- Other management level meetings (resourcing, business development etc.).
- “Lunch and Learns’ associated with project close-out.
- An extensive review of lessons learnt was conducted in mid-2015 at the request of a particular client, involving personnel from a range of disciplines.
- A Company-wide initiative to identification of and alignment with emerging/future industry trends was kicked off in mid-2016.

Implementation/testing of new models (“I” of OADI cycle)

As it is not necessarily possible to track an observation all the way to the action that it generates, instead instances of testing new models and practices are considered.

Within the research period, these have included:

1. Diversification

During action research Cycle 1 and continuing through the remainder of the research period, the Company made repeated moves to penetrate markets related to the core business but previously only peripheral to the Company. This included cable interconnector, carbon capture and storage, and wind farm projects.

2. Adaptation of service model

Typically survey management support would involve mobilisation of multiple client representatives at a rate which delivered a high margin to the Company. As a particular client balked at these rates, the Company risked losing the work to a rival. An alternative model was proposed, whereby a Company survey manager would manage the process of recruiting and vetting client representatives from the open market on the client's behalf. The client would then engage the reps directly, keeping personnel costs to a minimum, and the survey manager had the task of liaising with and coordinating the reps in the field. Overall, this worked well and portrayed the Company as an adaptive and proactive consultancy keen to reduce client costs.

3. Upfront engineering work

In an effort to develop a working relationship with a client being courted by the Company, a piece of engineering work was conducted at Company cost in order to showcase skills/personnel and identify areas for further work.

4. EPC work

The Company has considered taking on supply and delivery contracts on an EPC (Engineering, Procurement and Construction) basis; previously outside the normal

Company business model on account of the commercial risk involved with this kind of contract. This is in its relative infancy at the time of writing in that some tools have been developed internally to consolidate and promote Company capabilities for such projects but no contracts have yet been awarded.

One important point to note about these examples is that they may have been inspired partially or fully by the industry downturn and/or its effects within the Company. The drive to generate more work and keep people busy effectively created an environment in which thinking “outside the box” was encouraged regardless of inclination to learn/improve practice. At ground level it seemed that the main driver was survival rather than learning/improvement (as discussed at greater length in Section 7.2).

6.1.2. “Indirect” Measures

Self-Assessed Measures

Questionnaire responders’ scoring (1-5) against the question “How would you rate the Company on: Project team learning; and Collective learning as a whole?” were recorded and averaged at the start and end of each research cycle, with results as shown in Figure 6.3.

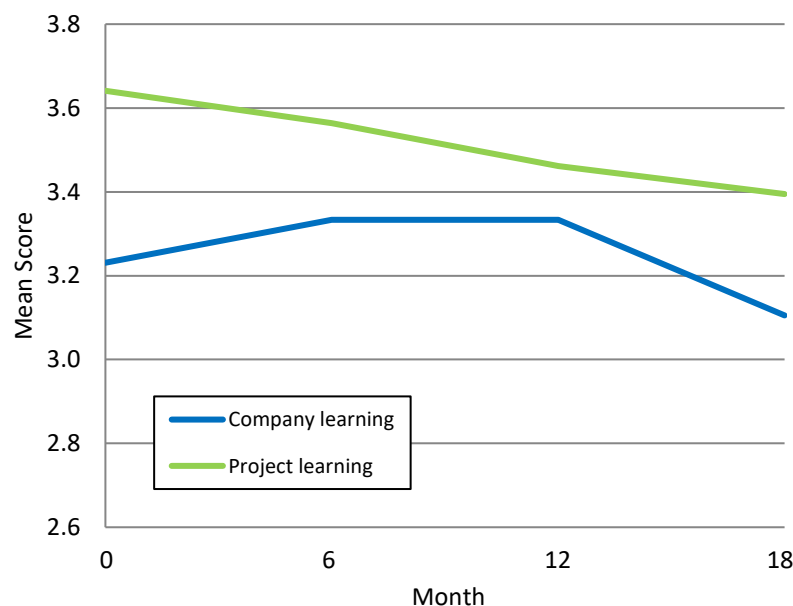


Figure 6.3 Mean Scores for Perception of Project/Company Learning

Overall it would appear that perceived proficiency at learning either at a project level or as a Company (between projects) has actually deteriorated during the research period; project learning from the outset, and Company learning after an initial increase followed by a plateau. Caution must be exercised before reading this as a trend however, particularly in the light of similar dynamics within all other scored measures and the downward trend in self-reported job satisfaction (see Section 7.1).

Otherwise, it would appear that the general consensus is that learning on a project level is better than between projects, but not dramatically so.

Comments Volunteered

The questionnaires completed for all cycles elicited a range of comments relating to learning; both within and between projects. Whilst there were no discernible trends in positivity of comments made over the course of the study, it is notable that they included comments which displayed a positive view of learning practices, e.g.:

“Compared to other companies I've worked for, I think [the Company is] good at sharing information between projects and groups. There is a good spirit of collaboration within the company and people are usually very positive about sharing information”.

“I think [the Company] tend[s] to do this well. I can only talk about the work I'm involved in here... ..but there are numerous examples I can think of when things learnt from conducting work on one [project] will be applied to the other [projects].”

“In my experience... ..the company does learn from project to project and therefore improves.”

“I think [the Company] learn[s] well with all lessons being captured into revised specifications/procedures etc.”

At the other end of the spectrum were more negative points of view, e.g.:

“From my experience within [the Company], the training of employed staff leaves a great deal to be desired - i.e. there is no training.”

“Sharing of information between projects is not as good as it could be. Lessons learned are not always acted on.”

"[Company learning is] Poor. I don't think this inter-group communication thing has ever been very good. Individual projects tend to be somewhat isolated, only really having the experience of its team members to draw on."

The contrast between these positions is dramatic, and raised a number of questions that were explored further in the subsequent mixed methods study, specifically:

- Is the concept of organisational learning commonly understood, and if so, how so?
- To what degree is learning practice common across all areas of the Company?
- Can frame of reference (i.e. previous experience with other companies) account for this difference in views?

The general failure to differentiate between organisational learning and training of personnel certainly suggested that the two were considered synonymous by many, around 70% based on comments volunteered.

Another interesting view fed back displayed a resistance to learning and improvement on the grounds that a consultancy looking to learn may undermine its own selling point:

"We shouldn't be "learning" – we are meant to provide specialist services"

This view has been echoed occasionally to the RE in response to the introduction of some of the interventions. It came initially as something of a surprise; the idea that acknowledging the possibility of learning was antithetical to the Company's business model as an expert consultancy was not something anticipated at the outset of the research. It presented a challenge in that it was difficult to see how this stance could be accommodated.

Other responders commented not on the success or failure of the Company's learning systems but on the mechanisms for learning and the factors that affect their performance:

"...within my discipline on the project, there has been a large turnover in staff since I started, which I believe has been detrimental to team learning on the project, as knowledge is not always passed on."

"We are learning on a daily basis because the procedures are constantly being modified or invented as necessary. There do not appear to be set ways of doing things."

"I believe currently, knowledge sharing is spread among groups on a mouth-to-mouth basis. A database would improve this even more..."

"I feel team learning is depended to some degree on leadership and management; learning can only take place where there is room and resource... ...I do feel project teams learn over the course of a project... ...but quite often this is by default as an appetite for learning may not really exist."

"...information is available, but it's not a simple route to it - it's not part of daily use, so a focus needs to be made with someone driving it."

Again, the range of opinion displayed about supposedly common systems and processes is marked.

Observed Learning

Changes in business practice/models/systems that suggest learning (i.e. a change of practice as a result of experience) has taken place were to be recorded wherever observed by the RE, as an indication that the learning process was taking on greater depth and profundity. Notable examples were:

1. Geographical Distribution

Conventional wisdom in consultancy would appear to be that when demand for work outstrips supply, rates quoted when bidding for work must go down. Rather than engage in a "race to the bottom" bidding wars, the strategy was developed to utilise Company outposts located in geographical areas where personnel costs are lower to deliver the more formulaic aspects of any given engineering project (drafting, document control etc.). This would allow a lower cost bid to be submitted without impacting required margins for any office involved.

2. Low cost training plans

As a reported result of the industry downturn (see Section 1.2.4), the budget for training costs (course fees, time of personnel and expenses) was suspended in

early 2015. Later that year, a dialogue commenced between the different European offices to attempt to pool knowledge and maintain personnel development in whatever way that could be achieved. The solution enacted was a programme of lessons delivered in a “Lunch and Learn” which all offices could attend either in person or via online webinar. This refusal to discontinue training whilst margins were tight was beneficial not only because a useful system of knowledge sharing was established, but also because it sent a positive message to personnel that their opportunities for growth are important.

3. Diversification

Diversification is mentioned in Section 6.1.1 as it appeared as a ground-level dynamic; it also became prevalent as a reported Company strategy for coping with industry uncertainty. At a senior management level, business areas for which the Company’s existing skillset could be adapted have been researched and investigated, and in some cases, resources have been committed to pursuing these interests (e.g. decommissioning, for which a dedicated Business Development Manager was appointed). This was an example of the Company looking outside its existing business model in order to develop new capabilities and become more adaptable.

Each of these instances could be described as transformative or double-loop learning, in that the change in behaviour observed demonstrates an expansion of the range of available alternatives. This is perhaps to be expected in this context, since single-loop type changes of process would be less likely to be visible at Company level. Nevertheless, changes of such a level of profundity appeared to occur, and again it must be acknowledged that the industry downturn and associated internal Company pressure to generate work may have had a contributory influence. This possibility is explored further in Chapter 7.

6.1.3. Summary

Whilst learning on a number of levels can be discerned from the collective behaviour of Company members within the research period, there is no clear evidence to support a case that such learning proliferated significantly. What progress/increase was observed may have been symptomatic of the influence of the industry downturn as a constant oppressive presence throughout the research period as much as of the programme of action research interventions. The learning cycle, if it is indeed an intuitive process, should be able to withstand a certain level of fluctuation in fortune and morale. It could even be argued that a company with effective learning processes should be capable of displaying greater resilience and pragmatism when that pressure is applied. Instead, the spread of learning practice appears to have stalled.

6.2. Observation 2 – Knowledge-sharing as dangerous

One of the strongest general impressions gathered during the initial consultation phase was of a company in which everyone was inclined to share information and develop the skills of the Company. True, participants in this exercise were limited to project managers and senior project managers; people at or near the apex of their technical careers who had spent time gathering and learning from personal experiences that could be of benefit to other, more junior engineers. However, this reported inclination dovetailed neatly with a widespread desire to learn reported by OGCom junior engineers anecdotally and via the surveys used in the action research phase, and the interviews conducted for the mixed methods phase.

It is also true that these complementary desires did not appear to have generated any specific action; or rather no such actions were reported. None of the initial consultation participants expanded on their responses to say "...which is why I have set up/lobbied for the establishment of a learning system for the purpose of xyz", for example. It may have been the case that actions went unreported, or that no such action was perceived

possible without a certain degree of buy-in from higher levels. Alternatively, or additionally, there may have been some bias in reporting owing to the social desirability of learning as a benevolent activity. In any case, an anomalous relationship was discernible at this early stage between the reported level of support for the principle and the action taken to deliver organisational learning.

The failure of organisational learning to spread “organically” following the establishment of a “natural” cycle discussed in Section 6.1 further substantiates the presence of a gap between stated intent and action taken.

The periodic surveys of the action research phase conducted to investigate RQ1.2 and relating specifically to dispositions towards learning and knowledge sharing provide further enlightenment. Comments volunteered by the action research responders during Cycle 1 largely reinforce the inclination reported during the initial consultation exercise; that there is a general openness towards knowledge exchange. Examples include:

“Most personnel are open to working together and openly sharing knowledges and ideas.”

“There is a good spirit of collaboration within the company and people are usually very positive about sharing information.”

“Learning... ...has been rather good with individuals tapping the knowledge of more experience colleagues for guidance...”

“The more experienced team members are always happy to help less experienced ones with the tasks assigned, and all team members are eager to learn...”

In subsequent action research cycles, feedback on this subject was sparse, although there was a sense amongst some participants that:

“Communication in general has deteriorated in the past 6 months.”

Later still however, as it became clear that the industry downturn (and associated Company down-sizing) would be a longer-lived phenomenon that originally foreseen, there was a suggestion that knowledge sharing had become detrimental to the

interests of (a) the individual:

“Some individuals in the company however tend to keep to themselves, perhaps [by] way of job security, which I find slightly annoying...”

“On a day to day basis... ..more and more people seem to be more focused on defending their roles, fearing a blaming culture or owning up lack of knowledge.”

“Since the industry is in a downturn... ..some individuals in the company however tend to keep to themselves, perhaps as their way of job security, which I find slightly annoying and not with the company shared vision philosophy.”

And (b) OGCom as a whole:

“...there is a hesitance to consider lessons learn properly at project levels for fear of client viewing as failure and retrospectively claiming against company.”

In both scenarios, it should be noted that this is a subjective interpretation of the attitude/behaviour of colleagues. However, it goes beyond suggesting an anomaly between intention and action; it directly contradicts the generally reported acknowledgement of the benefit of knowledge sharing and learning, and it is consequently an important avenue to pursue.

This protection of self-interest also shows that whilst individual learning will always deliver direct benefit to the learner (regardless of whatever other benefits it may deliver to other parties), the main beneficiary of collective learning is the organisation as a whole. Although this is beneficial to the organisational member in principle (assuming they would like their membership to continue), the benefit is likely to be dilute, indirect and delayed at best. It should not be assumed then that collective learning will receive the same level of motivation and effort as individual learning.

6.3. Observation 3 – Common vs. solo interests

The mixed methods Stage 1 semi-structured interviews included a number of questions intended to explore the difference between motivation factors/levels for individual learning and those for collective learning. Participants were asked:

- What motivated them to learn (individually).
- What motivated them at work in general.
- How motivated they felt in work (at that time).
- The degree to which they felt motivated to improve the fortunes of the Company.

Factors that reportedly motivated participants to engage in personal learning were led by interest (mentioned by 70%) and the desire to self-improve (60%). Notable factors also mentioned were personal growth, the expansion of opportunities, and the desire to do a good job. With the arguable partial exception of the lattermost factor, these are all self-motivated drivers.

Motivation to work, in contrast, enjoyed lower uniformity of response and was led by the need to fulfil commitments (40%); getting paid (40%); and opportunities to learn (40%). It should be noted that it was clear from the context that learning here refers to the participants' desire to learn personally whilst at work, rather than to learn as an organisation. Solving problems was also mentioned (20%), as were progress and/or achievement (20%), interest (20%) and enjoyment of interaction with peers (10%). These lists should not be read as comprehensive of course; what they suggest is that the factors that motivate the individual (a) to engage in learning and (b) to work are equally self-interested but different.

Current levels of motivation in work were reported as low to medium level by the majority (60%), and high by the remainder. The industry downturn/outlook was quoted a number of times as a de-motivating factor:

“The workload is not giving me the opportunity to expand.”

As was the (partially consequential) state of flux of the Company:

“Some change is good; too much just makes things difficult. You get numb to it after a while.”

Motivation to improve Company fortunes was generally accepted as a principle, but in some cases, it was acknowledged that it rarely, if ever, catalysed any particular action.

This hints at the application of a particular breed of social desirability bias; one where a certain principle is, apparently honestly, accepted, but then fails to lead to any corresponding action. It might well be dubbed the “New Year’s Resolution” effect because the stated intention is genuine, but the commitment is lacking or forgotten when the opportunity for action arises. Whereas social desirability bias is typically used to describe a tendency of individuals to present themselves in a positive light in relation to “acceptable” behavioural standards (e.g. Chung and Monroe, 2004) or in relation to peers (e.g. Randall and Fernandes, 1992), here there is no real positive advantage in endorsing learning as an organisational principle; it is simply what is intuitively accepted as sensible practice. To put it another way, it seems unlikely that anyone would denounce learning as a bad idea.

As a further corroboration for the presence of this bias, the participants in mixed methods Stage 1 interviews were asked whether they would agree or disagree with the statements:

1. Safety awareness is critical in this industry.
2. Quality management is essential to effective engineering.

As would be expected, agreement with both was universal amongst interviewees. As described in Section 6.5 however, this does not appear to translate into utilisation of and compliance with Company safety reporting and quality management systems⁵⁷.

⁵⁷ By comparison with overall utilisation levels rather than by examining the individual utilisation records of the interviewees in question.

6.4. Observation 4 – Contextuality

Mixed methods Stage 2 built on inferences drawn during Stage 1 regarding the role of motivation in organisational learning to derive a relative measure for the gap between motivation to support organisational interests and motivation to support personal interests (in the work context). RQ2.1 speculated that this motivation gap would be a common feature of all organisational and industrial settings. Comparing the values returned across different organisations within each of three dissimilar industries showed general support for the idea that motivation is a key issue, but also that it affects different industries in different ways. Those differences are speculated upon, based on feedback received during Stage 2.

It would seem that motivation is a significant component or driver of organisational learning, and one that may help to explain why it is harder to achieve than individual learning. Motivation, defined by the Oxford English Dictionary⁵⁸ as “a reason or reasons for acting or behaving in a particular way”, is an elusive quantity since it is not directly observable and is difficult even for an individual to assess in themselves. It is a vector-like quantity since it has both a magnitude and a direction (or subject). Motivation (to do something in particular) can be assessed indirectly in two ways; either by inference, measuring the actions to which it would appear to have given rise, or by subjective, qualitative self-assessment.

The main problem with using action as a proxy measure for motivation to complete that action is that low motivation is only one of a number of reasons why a particular action might be avoided. It is also potentially misleading to monitor an action or actions in isolation of others for which competing motivation may be higher. Making the observation that utilisation of the learning system was lower than expected, for example, gives little insight by itself as to the role that motivation (or lack thereof) may

⁵⁸ <https://en.oxforddictionaries.com/definition/motivation>. Accessed 12th April 2018.

have played in the outcome.

Typically, self-reported measures may be direct (i.e. “I feel motivated to undertake action X”; e.g. Dórdio Dimas *et al.*, 2015) or via agreement with expressions of motivational engagement (i.e. “I like to do action X”; e.g. Smit *et al.*, 2017). In either case they are fairly meaningless as absolute quantities, since there is no way of calibrating them against some baseline measure of motivation for a particular task. One way to address this issue is to make the measures relative, and thereby assess whether an individual considers their own level of motivation for a task is greater or lesser than for a different task. Or, as was the approach taken in Stage 2, participants were asked to give relative scores to the degree to which a number of drivers contributed to their overall motivation.

By comparing the reported motivation score for those drivers that were explicitly organisation-focused (“Improving the fortune/position of the organisation as a whole” and “Contributing to the success of the organisation as a whole”), a basic “organisational motivation factor” (OMF) could be derived. The polarity of this OMF indicated whether organisational drivers were more or less motivating than self-interested or non-organisational ones. Although the magnitude of the OMF is not something that can be calibrated to have meaning as an absolute, the relative magnitude of OMFs from different organisations/industries gives an indication of the relative importance of the drivers to the different parties.

Predictions made at the outset of the exercise (in order to mitigate the researcher’s situatedness by acknowledging his expectations; as discussed in Section 3.4) were:

Prediction 1: That organisation-serving motivational drivers would score universally low across all organisations and industries (i.e. positive OMFs).

Prediction 2: That the gap between organisation-serving and self-interested factors would be fairly constant within a particular industry (OMFs consistent between

comparable organisations).

Prediction 3: That the gap between organisation-serving and self-interested factors would be fairly constant between industries (mean OMFs consistent between industries).

These predictions reflected the impressions gained during Research Phase 1, and strengthened during Stage 1 of Research Phase 2, that members were insufficiently motivated to drive and sustain the organisational learning cycle and that this paucity of motivation was a natural aspect of the organisational condition.

Figure 6.4 shows the mean OMF for each industry, as well as industry maxima and minima. All OMFs are, as Prediction 1 forecast, positive. It can be seen that the average was similar for Industries 1 and 2 (Engineering and Medicine), but the Industry 3 (Education) average was markedly higher indicating a more organisationally motivated disposition, and confounding Prediction 3. There was also more variance than predicted (Prediction 2) between the maxima and minima for the different industries. The spread of the Engineering companies (minimum to maximum) was greater than that of the teachers/educational staff (60% higher), but the spread of the medical professionals was higher again (60% in relation to the Engineering company spread).

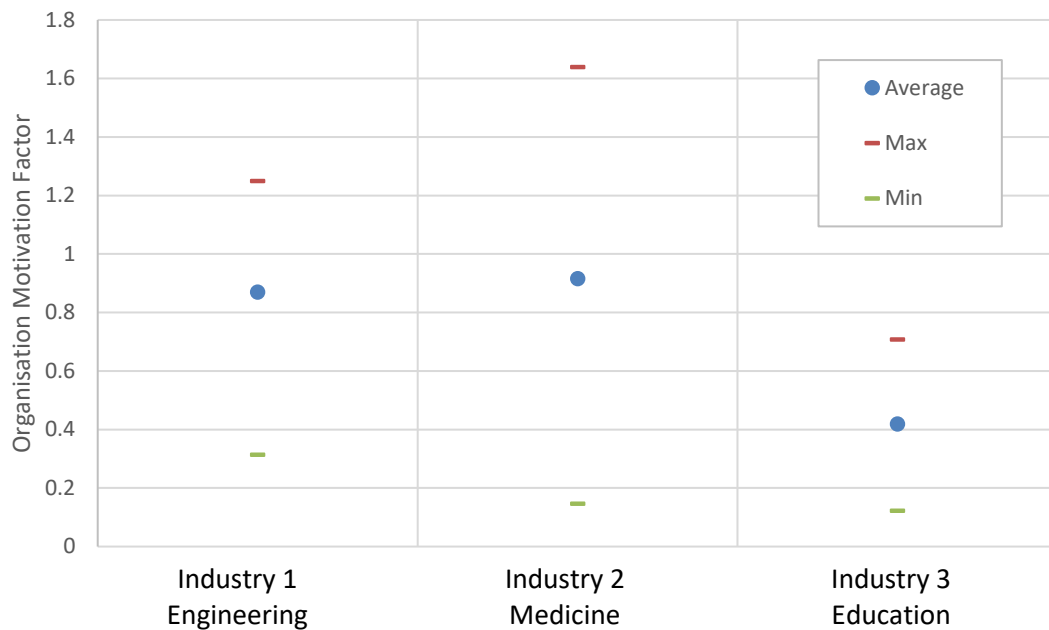


Figure 6.4 Average OMFs and OMF Ranges

What these figures, based on relatively small samples, suggest is that (a) there is indeed likely to be a motivational challenge is making anything happen that relies on individuals habitually acting in the interests of a large collective, including organisational learning and (b) that that challenge is not necessarily equal in nature or magnitude for all industries.

The differences between the averages and distribution ranges of the different industries can be seen more clearly if the average OMF for each organisation within each industry is plotted against the size of that organisation, as shown in Figure 6.5. It should be noted that the organisation size used is the average of the values reported by participants of that organisation, and that there was some variation in some cases. However, the interpreted trend lines shown below respond to RQ2.3 in that they suggest a distinct pattern of correlation for each different industry.

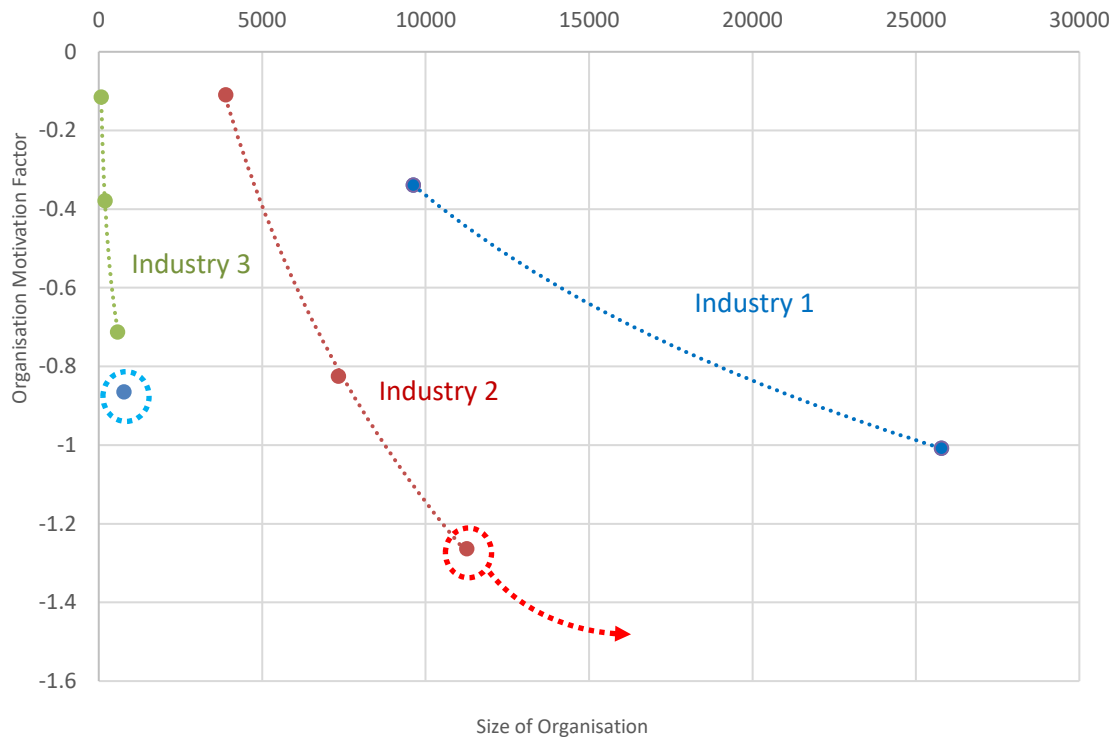


Figure 6.5 OMFs vs. Organisation Size by Industry

Industry 1 is the “baseline industry” (oil and gas engineering consultancy) not because it is necessarily any more typical of organisations in general than the other two but because it has been the focus of the rest of the research described herein. The point highlighted in blue dash has been excluded from the trend line because the organisation in question had just announced a substantial proportion of redundancies at the time the surveys were completed. It is therefore possible (and likely) that morale and motivation to further company interests were particularly low, and that the OMF was lowered as a result. As one participant of mixed methods Stage 2 put it:

“The Company has had a change of management imposed by the owner. The workforce (including myself) relationship with this management team has irreconcilably broken down and the previous 17 years of close working and mutual support have been destroyed over a short period of time. The survey results may therefore be biased as a result.”

Excluding the value allows a line to be drawn that shows a comparable trend to the other industries.

The trendline for Industry 2 indicates a correlation between organisation size and magnitude of OMF. The value highlighted in red dash obeys this relationship, but in fact the point should be much further to the right as the members of the organisation in question interpreted the question relating to organisation size as the whole of the NHS (over 1.2 million members⁵⁹). The other medical organisation participants instead reported the sizes of their respective trusts. The difference in interpretation is interesting because it shows a difference between the bounds of the organisation with which the members identify, not just the group (as discussed in Chapter 8).

The size of the organisation is not the only factor that sets apart the three medical organisations however. A trendline could also be drawn to show a correlation between proportion of doctors (as opposed to nurses or other supporting staff) and magnitude of OMF. It might seem intuitive to think that, as the better rewarded and trained of the two groups, doctors would show greater altruism. Indeed, some of the comments volunteered by these participants reflect a laudable level of commitment to the common good:

"Much of the motivation is about improving and sustaining good quality patient care and therefore supporting/benefiting the work place often has that core value at the centre."

"Charitable Work [is a key driver] - a lot of doctors fundraise for their hospital"

It is possible however that the inverse is true, perhaps as a result of the recent and extended dispute over junior doctors' contracts⁶⁰ (doctors surveyed would all have been affected based on years' experience reported).

Industry 3 shows a still more marked change from the baseline. The teachers' OMFs were generally much closer to zero, suggesting higher levels of motivation to support common interests. The organisations were much smaller than for the other industries,

⁵⁹ <https://www.nhs.uk/NHSEngland/thenhs/about/Pages/overview.aspx>. Accessed 29th April 2018.

⁶⁰ <https://www.independent.co.uk/news/uk/politics/jeremy-hunt-unilaterally-imposes-new-contract-on-junior-doctors-without-their-agreement-a6867106.html>. Accessed 14th April 2018.

but there is still a demonstrable trend linking size to OMF. One feature that stood out in the teachers' responses however was that in response to the invitation to add other drivers to the list, a number added "pupil outcomes" as a strong influence; or words to similar effect:

"Enabling students to reach the highest grades possible."

"Helping young people."

"I am a teacher - the performance of the students!"

This, and the debriefing discussion held with the principal contacts within these organisations, gave a strong suggestion that (a) achieving good outcomes/results for pupils as a driver accounts for a high proportion of teachers' motivation in general and (b) that this necessarily leads to a supportive disposition towards their organisation, since the school must function effectively as a whole for the pupils to achieve/benefit. The type of industry would seem to establish a certain co-dependence of organisation members that may override, or at least influence, personal motivational drivers. It may be the case that there is an industry-related common interest factor which governs the gradient of trendlines as shown in Figure 6.5.

The learning characteristics of the different industries are discussed at greater length in Chapter 7.

6.5. Observation 5 – Mandation is not motivation

Motivation is generally acknowledged to originate either intrinsically or from extrinsic sources (Walston 2017), and in organisational theory the word is often used in the latter context; i.e. considering how members can be motivated/given motivation to do something that they do not embrace by choice alone. This classification misleads slightly since behaviour is determined intrinsically in response to (intrinsic and) extrinsic factors. The subject cannot be compelled to do something; they can only be given sufficient extrinsic incentive to generate intrinsic motivation. This is important because an extrinsic incentive (a pay rise, say) will fail if the individual has no real interest in money. If, as Ryan and Deci (2000) suggest, the most compelling motivating factor is the (intrinsic) feeling of being valued by a social and work group, then the challenge to the organisation becomes how to encourage this feeling in its members.

It is tempting for the organisation to think that motivation to use a system can be created within its members by making such use mandatory. However, Senge (1990) advises that "...making learning an "add-on" to people's regular work has probably limited more organizational learning initiatives than any other factor." Nevertheless, companies that espouse a mechanistic management style may well conclude that a particular collective task is guaranteed simply because it has been encoded in procedure. This was certainly the case in OGCom, and in fact the organisational learning system exemplifies the failure of this approach. Whilst this failure is not academically novel, background data gathered during the action research phase of the research provided the opportunity to (a) demonstrate and (b) scrutinise this effect further.

Data was collected on the utilisation of two different OGCom systems during the action research phase. The first is an online tool which effectively constitutes the Company Quality Management System (QMS); the second is also an online tool, this one for the

logging and processing of safety observations. What is interesting about the comparison of the two is that usage of the first is mandatory for all personnel but only approximately half of the Company is obliged to use the latter system. This is because the half for which the safety observation system is mandatory are people working on projects for a particular client, who requires all their subcontractors to operate and use some such system. For the remaining half, use of the system is encouraged but not mandated or monitored. This fairly unique scenario allows investigation of whether widespread use of the system by one half spreads organically to the other half.

As noted in Section 6.3, the semi-structured interviews conducted in mixed methods Stage 1 confirmed that buy-in to the principles behind both systems is universal (i.e. it was agreed by all that safety and quality management were critical to the business of the Company).

QMS Platform

OGCom operates an online QMS tool which uses a Geographical Information System platform to allow the user to navigate a series of interlinked process maps describing all quality-managed processes undertaken by the Company. Active links are embedded in the maps which introduce go-bys, templates and sub-maps as appropriate to the process being followed. It is a proprietary system that was introduced in January 2014 with the objective of replacing a library of outdated and over-wordy procedural documents with accessible and intuitive diagrams describing Company processes.

Use of the system is mandatory for all personnel, in that:

- Instruction has been given to this effect, both during system roll-out and since.
- All personnel were obliged to complete online training modules on its use.
- Any Company activities conducted without engagement with the system are not demonstrably quality-controlled in the approved manner.

- The system covers business aspects including corporate management, project management, project execution and all supporting services. In theory, therefore, there is no tier of the organisation that is exempt from use of the system.

Observations drawn from investigation of usage by OGCom's London office of the QMS⁶¹ within the research period are:

1. Overall usage is approximately consistent at 40%

In any given six-month cycle in the research period, approximately 40% of the London office logged on to the QMS. As would be expected, user numbers in the London office, and presumably the rest of the Company, have declined as the headcount has reduced through the research period. This does not mean that approved practice is not being followed by 60% of the Company but it does mean that there is no reason to be confident that it is.

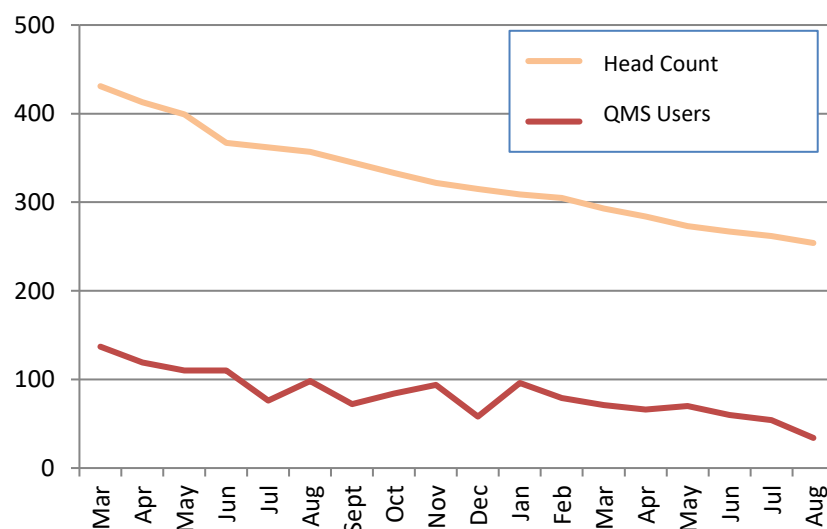


Figure 6.6 QMS User and Personnel Number Trends

Users included in the figures above have only to log on just once in a six-month period; the differentiation is not between frequent and infrequent users but between non-users and users of any frequency.

⁶¹ Drawn from system log-in data for the relevant periods

2. Usage increases as engineering/management rank decreases

For the technical categories, it appears that the proportion of a Category group using the QMS increases as the level of seniority decreases (see Table 6.1).

Table 6.1 Usage of QMS by Category

Period	Percentage of Category Group Using QMS (%)			
	2	3,4	5,6,7	8
Cycle 1	15.04	42.67	84.36	55.56
Cycle 2	14.92	33.98	77.07	50.00
Cycle 3	15.75	35.46	79.58	38.83
Average	15.23	37.37	80.34	48.13

From Categories 2 to 7, the proportion of the group using the QMS remains fairly constant from one period to the next. The exception is Category 8, which as a relatively small group is disproportionately affected by departures.

3. “Regular” users are relatively few

The proportion of the users during the first six-month period (action research Cycle 1) who then also logged in to the system in Cycle 2 was 67%. The same (approximately) was the case of users from Cycle 2 to Cycle 3; roughly two thirds of the people who logged in during Cycle 2 also logged in during Cycle 3. The proportion of users who logged on in all three six-month periods was 35%, expressed as a percentage of the cumulative users remaining at the end of the research period. This equates to 14% of the office overall (35% of the 40% of users) who were reliably regular users over the 18-month period.

Moreover, a large proportion (43%) of users in any given six-month period are single log-in users only; over 75% log in fewer than five times.

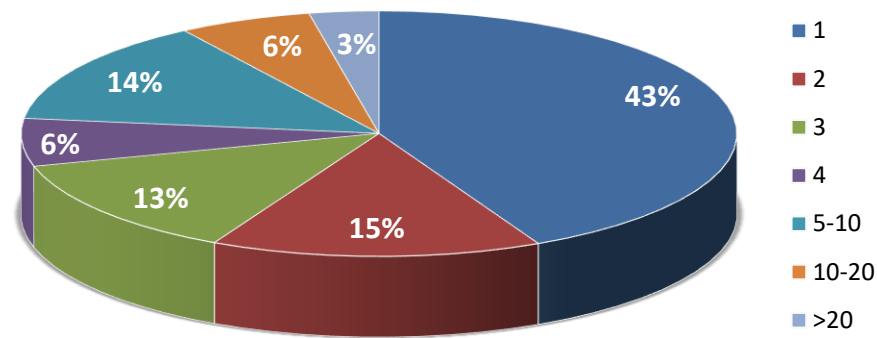


Figure 6.7 Average QMS Log-ins per User

It is important to note that log-on figures should not be read as endorsement of the system. Firstly, it is not discernible from these data whether people are using the system in the way it is intended to be used. There is no particular target utilisation threshold exceedance of which would indicate that the system is “widely” or “appropriately” used. Secondly, it is not clear whether or not the system is looked upon favourably as a useful tool, or whether it is seen as a necessary nuisance.

Safety Observation System

The Safety Observation System (SOS) is an online safety observation recording and tracking system which was introduced by OGCom’s HSE department in late 2011. It is a proprietary system that is similar in design and operation to a number of other industry safety observation systems. It was created to answer a requirement that a key Client had of its subcontractors; to have and encourage use of such a system. Consequently, although it is accessible to the whole Company, those working on projects for the Client in question (approximately half of the Company) are obliged to raise at least one observation per month. The obligation is “enforced” by the OGCom HSE Manager assigned to the projects for said Client; enforcement involves chase up emails and ‘naming and shaming’ in certain contexts.

The nature of the SOS observations raised was sometimes remote from the work context, in that they may have involved other locations, non-work scenarios and often

other people entirely (“my neighbour...”, “my brother...” etc.). Whether this type of observation has an impact on office safety levels is highly subjective, and perhaps misses the point that it may help to raise the ordinary level of safety awareness of the observer. The stated aim of the system is to:

“...instil a safety culture where safety awareness and safety acceptance are in the minds and the hearts of all.”

It is possible to raise both ‘safe’ and ‘unsafe’ observations; the average ratio of the two over the research period was a fairly consistent 59:41 (SD 5%) in favour of unsafe observations.

Observations drawn from investigation of usage by the London office of the SOS within the research period are:

1. Overall use has declined approximately in proportion with headcount

Whilst the mean number of observations per user within OGCom during the research period was a stable 1.23 (SD 0.06), as would be expected, the reduction in overall personnel numbers over the 18-month research duration resulted both in fewer observations and fewer observers.

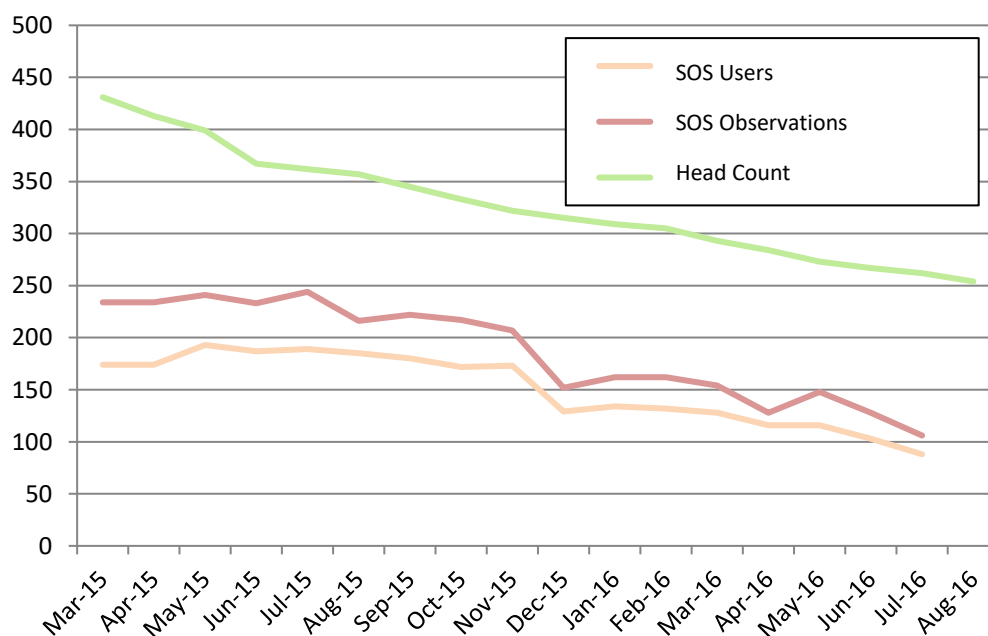


Figure 6.8 SOS Utilisation 2015-16

The division between personnel working on projects for which utilisation was mandatory and those for whom it was not over the research period (by month) was approximately 50:50 (SD 3%).

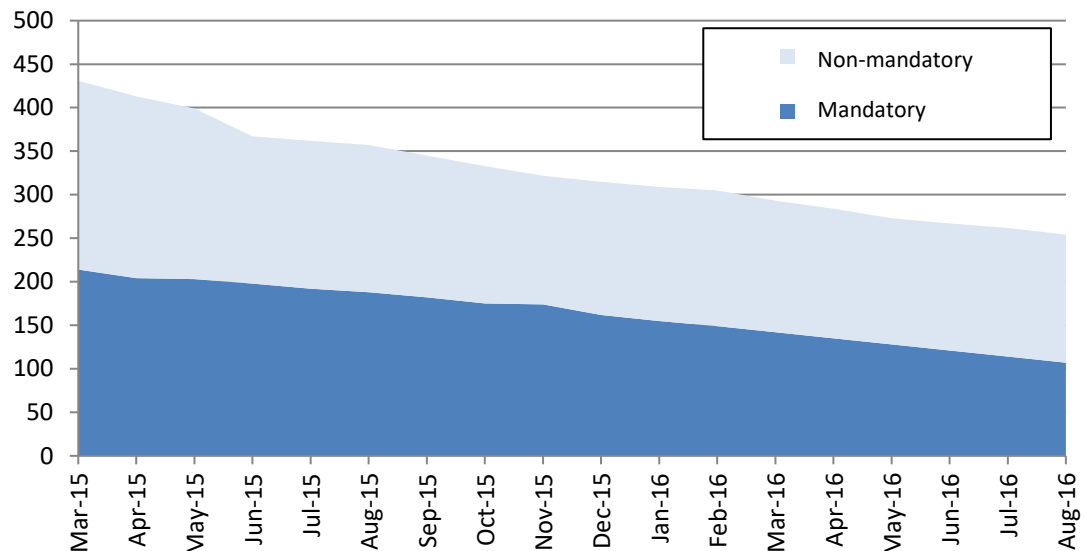


Figure 6.9 Mandated vs. Non-mandated Project Headcount 2015-16

2. Utilisation is only high amongst mandatory project personnel

Utilisation of the system is consistently high amongst personnel on mandated projects; 86% (SD 7%) used the SOS as required. Only 3% (on average; SD 1%) of Company personnel on non-mandatory projects use the system in any given month. What this suggests about systems in general is that mandating use may lead to increased utilisation but not necessarily engagement or change.

Statements regarding the SOS system broadly endorsed those made previously, in that participants were only regular users when they were obliged to be as a result of project commitments. The effectiveness of the system of a recording mechanism was generally acknowledged, but observations are perceived not to result in any action. It was also often noted that many observations made are non-work-related at best, and box-ticking “for the sake of it” at worst. Opinion is divided as to whether it is a useful tool overall.

6.6. Summary and Conclusions

The failure of a learning system, constructed to reflect the form of the individual experiential learning cycle, to proliferate despite high reported levels of support for such learning is counterintuitive indeed. What makes it particularly puzzling is that the members of the organisation participating in the cycle were, according to individual learning theory at least, constantly learning as entities each in their own right; yet the organisational entity was not.

This draws attention to an aspect of individual learning that makes it rare amongst other human functions; it is both voluntary and involuntary. Like the physiological process of breathing, it happens without conscious effort and yet it can also be affected and controlled at the whim of the individual. Experiential learning aligns approximately with the involuntary level, in that what is absorbed in a non-academic context is often not subject to conscious reflection and processing. Academic learning aligns broadly with the voluntary level, in that when individuals intend to learn something specific, they typically seek to do so in an academic context. No conscious effort is required to drive the much of the experiential aspect of individual learning (although effort may of course be spent in order to influence it⁶²), and the stages of the cycle are generally internal and cerebral.

Whilst it is not inconceivable that involuntary learning may occur on an organisational level, in practice it is unlikely that collective behaviour will change evenly throughout simply as a result of shared experience. For the organisation, the stages of the cycle require the agency and collaborative action of a number of members. Furthermore, unless the progression of the cycle is part of the membership function (i.e. job role) of any particular member, participating in organisational learning is an addition to the

⁶² And in fact, modern theories of education generally seek to leverage the involuntary levels to achieve more effective academic learning.

baseline workload. If members are required to take “extra” efforts, some kind of motivation is necessary to make this happen. Despite assurances received to the contrary during the stages of this research, it appears that the desire to be part of an organisation that learns is not sufficient to make this happen.

The theme underlying many of the unanticipated outcomes of this research is the motivation gap; a gap that exists because organisational learning is not involuntary. Members are not automatically driven to share their observations and learning; the semi-altruistic service of the collective interest does not close the gap because it is a lower priority than member self-interest. As identified in Chapter 5, each stage of the organisational learning cycle has a responsible party or parties. If the cycle is to function, the motivation of each responsible party must be secured.

Although involuntariness is logically unachievable in organisational learning, a close approximation may be achieved if learning actions can be established as habitual. However, it has been shown that where activities supporting the common interest are made mandatory, they receive only half-hearted support. There would also appear to be some variation in the degree to which the motivation gap affects organisations in different industries, and it may be the case that this is attributable (at least in part) to the degree of altruism inherent to the different industries. Teachers, for example, are typically motivated to help their pupils, and are driven to work towards building and maintaining an effective organisation in order to do this.

Ultimately it would seem to be the case that any collective learning (or other) system designed without due consideration of what will motivate the relevant members to take each required type of action is destined to stagnate. It is imperative that the organisation considers, for each step of the learning process, what factors will motivate the agent responsible to perform their task with rigour and enthusiasm.

The key points made in this chapter are:

1. A “de-obstructed” organisational learning cycle does not permeate through the company organically once established (or at least not within the timeframe under observation).
2. The intuitive wisdom that learning and knowledge-sharing is mutually and collectively beneficial for organisational members is not universally reflected in the practice of those members.
3. The benefits to the individual of organisational learning are indirect and remote, meaning that incentives to learn collectively are far lower than for individual learning. Motivation is therefore a major challenge to organisational learning.
4. Motivation to learn collectively would appear to vary with different industrial contexts.
5. Replacing motivation with mandation delivers only cursory and temporary engagement at best.

7. Outcome 3: Cultural Divide

The importance of establishing a strong learning culture in the pursuit of organisational learning is well established, and in fact underpins most Learning Organisation theory (whether explicitly or implicitly). Creating and maintaining such a culture is challenging however, and it is made more difficult as an endeavour by the fact that culture is influenced by what happens outside the organisation, in its operating context and beyond, as well as what happens within. This chapter makes the case from observations made during the different research phases for the vulnerability of learning culture to external influence. The function and position of learning culture in the “lemniscate” model proposed in Chapter 5 is then considered.

7.1. Observation 1 – The Effect of Industry Downturn on Culture: Part 1

It was a key aim of the action research study (Research Phase 1) to explore whether the development of learning practice can/does create or catalyse learning culture (RQ1.3). This was to be achieved by engineering such a development and then measuring the change on a number of variables intended to gauge Senge’s Learning Organisation disciplines. In practice, as documented in Section 6.1, this development was not achieved and consequently the original question remains unaddressed. There are, however, answers to be gleaned from this part of the exercise, since changes in measures relating to Learning Organisation characteristics were observed during the research period. They respond to a different question though, which is: what effect does commercial/organisational instability have on learning culture?

It may seem to be something of a leap to assume that changes observed were entirely attributable to the instability created by the industry downturn. At ground level in OGCom it was certainly the most significant topic of discussion within the research period in corporate, line management and peer-to-peer communications alike. This is substantiated by a number of sources, specifically:

1. The ethnographic experience of the RE as an employee of OGCom, and as one in fact within a sub-group under threat of redundancy for some of that time.
2. Corporate and management announcements and bulletins, which rarely failed to mention the challenges being experienced industry-wide, and consequently championed solidarity and diligence (and frugality).
3. Staff redundancies and cessation of freelancer contracts, as charted in Section 1.2.4.
4. Feedback submitted in text-entry sections of six-monthly personnel surveys associated with the research. These sections inviting comments were non-compulsory and feedback was limited. Nevertheless, a high proportion made reference either to the downturn or its perceived effects (as documented later in this section).
5. The number of OGCom-related social and semi-social activities that were discontinued as “non-essential expenditure”, citing the downturn specifically as a cause. This included cessation of the company training budget, formal annual summer and Christmas parties, subsidisation of attendance at industry events and conferences, semi-annual management presentations/question-and-answer sessions, subsidisation of sports and recreational clubs etc.

If this revised research question is accepted (i.e. if it is accepted that changes observed are attributable, as it would appear, to the organisational instability that characterised the research period), the dataset relating to RQ1.3 can be mined for related insight.

Each of the disciplines was measured by a number of metrics intended to triangulate to support a common trend/outcome. However, the majority of these metrics were either undermined by discontinuation of relevant practice during the research period (e.g. the training budget was suspended so applications for funding of training made by members also stopped) or they failed to show any clear trend. These metrics are

summarised in Appendices C to F.

The measures that did turn out to be instructive were the scores of the questions in the action research periodic questionnaire that related to self-assessment of the Learning Organisation disciplines. Although these measures each corresponded to a different aspect of Senge's model (excluding personal mastery), the results are best viewed side-by-side as the combined picture they paint provides greater insight than when considered in isolation.

The statements with which participants were asked to what extent they concurred (scoring from 1-5; strongly disagree to strongly agree) were as follows:

- Company personnel share a common vision.
- Company objectives and strategy are coherent and widely understood.
- The Company uses conceptual models and diagrams to communicate key ideas.
- The Company demonstrates holism and 'joined-up' thinking (systems thinking).
- Operational efficiency within the Company is high (systems thinking).

It should be noted that the last two measures were both intended to detect changes in perception of systems thinking within the Company, and that personal mastery was not assessed via this medium.

The mean scores recorded across the research period are as shown in Figure 7.1; the dashed line shows a mean of the five measures. There is a degree of variation in the path of the measures up until Cycle 2; perceived use of mental models, coherence of strategy and holism all appear to be on an upward trend, whilst commonality of vision plateaus and efficiency deteriorates. After Cycle 2, however, all measures divert sharply downwards, with coherence of strategy experiencing the sharpest decline. (The downward trend of efficiency is least affected; in fact, the overall trajectory appears to be fairly constant.)

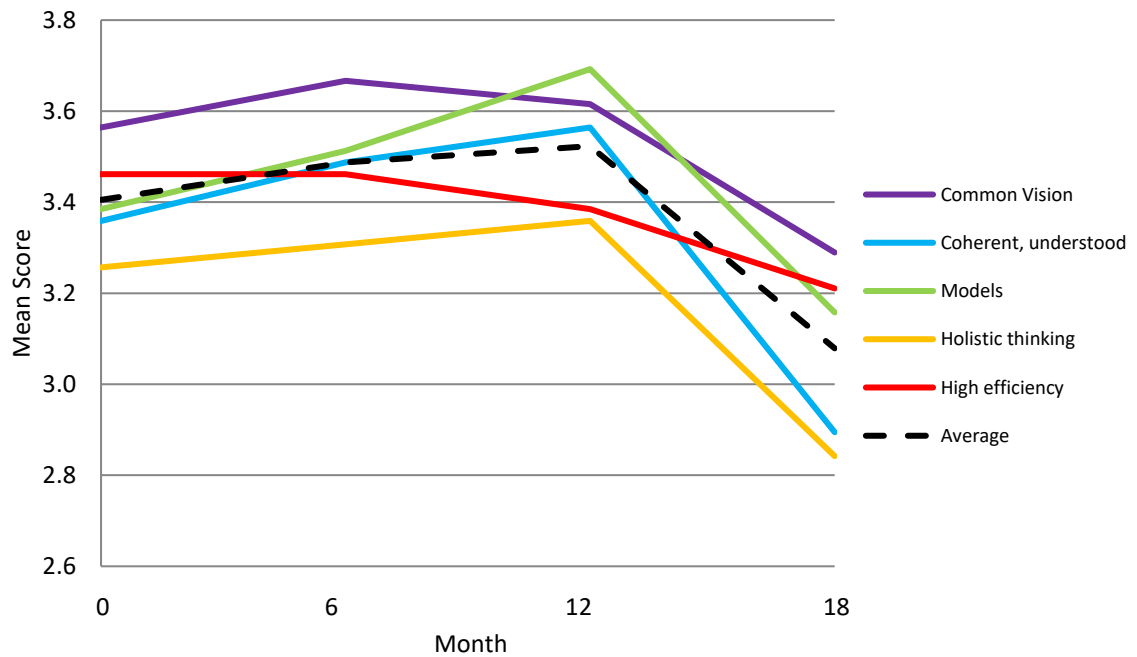


Figure 7.1 Mean Scores for Senge's Pillar Metrics

It is interesting to note that the standard deviation of the scores generally increases as the mean falls (as Figure 7.2 shows), suggesting that views become more polarised as opinions deteriorate.

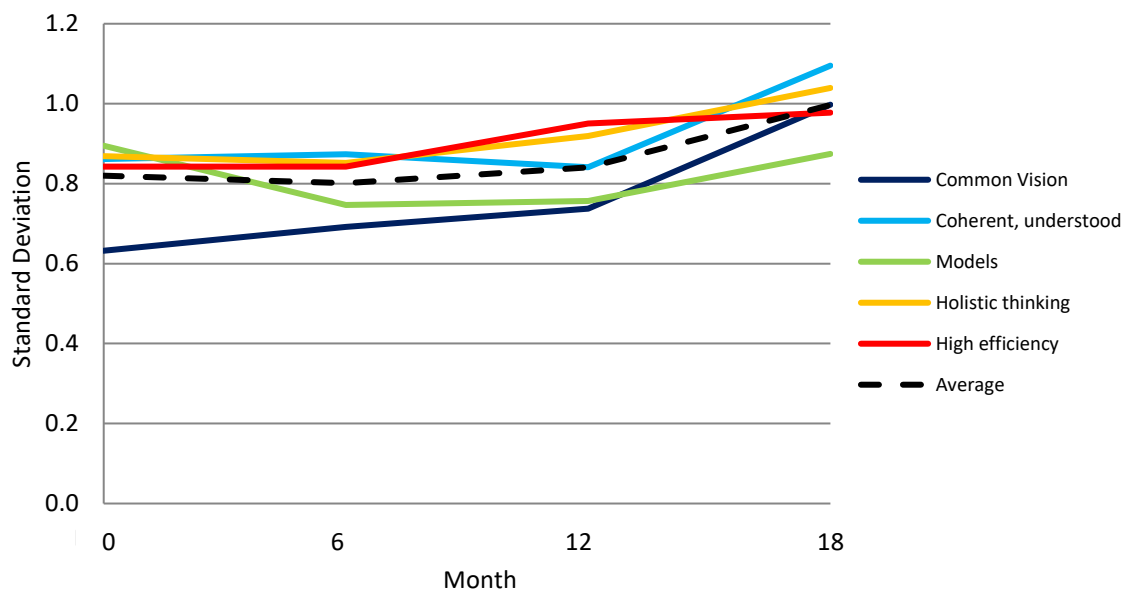


Figure 7.2 Standard Deviations for Senge's Pillar Metrics

There is no clear event during action research Cycle 3 to which this shift can be attributed. Cycle 3 was not marked by a higher proportion of redundancies than the earlier cycles; neither was there any particular shift in the Company's practices relating

to learning culture. It may be the case that the uncertain environment had a cumulative effect, and this was the point at which members tired of exposure to loss of work/jobs. The effect of the downturn on morale within the action research period follows a similar trend. Self-reported job satisfaction has been used as a proxy for general morale level in this study; the important aspect again being not the values themselves but the direction and magnitude of change. During the research period, (self-reported; on a scale from 1-5) job satisfaction was observed to drop from a mean of 3.8 (SD 0.68) to a mean of 3.3 (SD 0.85); a 14% reduction. (If the scores of only those 38 participants who did not leave or drop out before the end of Cycle 3 are considered, the starting mean is 4.0 (SD 0.48) and the corresponding reduction becomes 18%.)

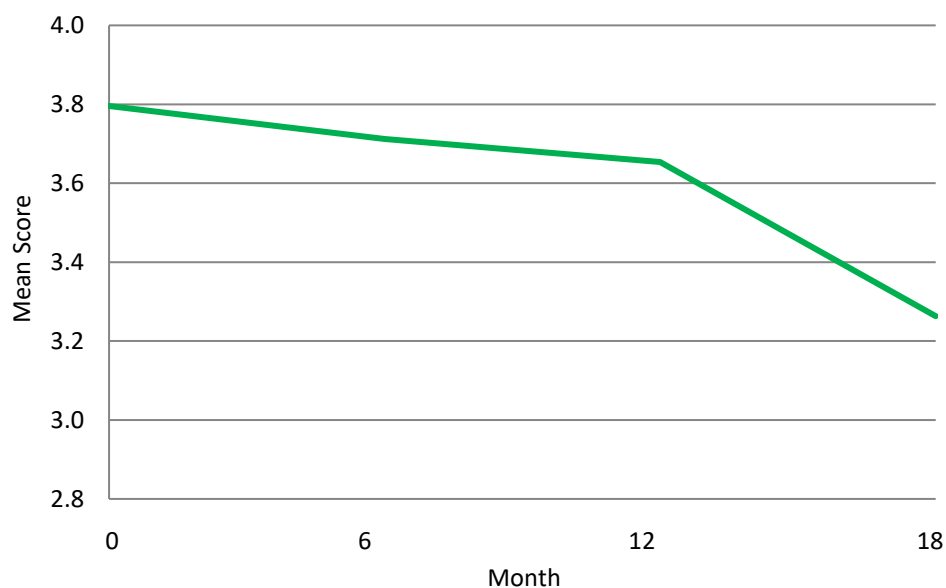


Figure 7.3 Standard Deviations for Senge's Pillar Metrics

It should be noted that, even at the beginning of action research Cycle 1 (March 2015), comments made by participants relating to job satisfaction acknowledged the industry downturn (then in its relative infancy) as a detracting factor. Participants who felt motivated to include a comment on job satisfaction totalled 22 (of 95 at the outset); 7 of these (32%) mentioned industry outlook directly. At the end of Cycle 3 (when 38 participants remained), 9 comments were registered against job satisfaction and all but one of these (88%) referenced the downturn.

The following comments typify thoughts expressed on the subject by participants from various disciplines/departments:

"[I am] constantly wondering whether I will be in my job in 6 months' time."

"It is a difficult time at present, I am satisfied when I am busy... ...but not very satisfied when not busy... ...I am treading water waiting for something to come in, unable to book a project standard 40 hour week."

"At this moment in time, it is hard to be 'high' on the job satisfaction as periods of inactivity are common."

"[My] stress level is increasing due to market conditions and how [the] company is trying to align itself with this new situation."

"...uncertainty in the industry leads to below average job security and I don't think this issue is addressed too well by the company..."

The use of the expression "the Company" instead of specific names, or "our management", creates the impression that an "us" and "them" division may also be perceived (this is considered at greater length in Section 8.3).

Other comments received during the research period pointed to other, additional factors, so industry status was not necessarily the only driver. For example, the exercise (which was ongoing during the action research period) to achieve increasing integration between the Company and its parent group, coupled with a number of changes of command at high level created a situation in which new organisational structures were rolled out on almost an annual basis. Comments on this subject included:

"[The] Company structure is confusing and concepts, initiatives, objectives... ...can, in my opinion, become diluted or unsuccessfully implemented."

"[There is] Lots of confusion over restructuring I feel. Not sure who is responsible for what!"

"[The] Constant restructuring/change in titles is confusing and does not provide a coherent and widely understood strategy."

"Changes to the company are evident... ...but exactly what changes not clear at times."

*"[I] Can see the company is undergoing structural changes, [it] will take a while...
...to fully understand company structure and sub-structures."*

*"With the group integration, efficiency is going down, as the company
superstructure makes unclear responsibilities..."*

*"[A] Company restructure is being implemented, [and] vision and strategy have
been communicated. However, the workings of the structure are not widely
understood."*

*"The company is constantly changing its shape and ever changing new corporate
structures makes it difficult to keep up to date with coherent strategy."*

It would appear that the repeated revision of the Company structure, although each iteration is created (presumably) for organisational efficiency, gave the impression of disorder within the Company rather than shared vision or systems thinking. Anecdotally, members became increasingly ambivalent towards understanding the current organisational structure and showed signs of becoming "numb" to the succession of changes.

Another source of discord (seemingly rooted in the downturn) was the understandable reluctance of immediate tiers of management to convene meetings to communicate discouraging news. Conversely, the flow of motivational messages from higher management increased within the same period. These factors combined give the sense that all information being distributed about the Company's fortunes originates a long way off, undermining its trustworthiness:

*"Information is hard to come by lately and no one seems to be singing from the
same hymn sheet."*

*"I have noticed that we get emails on quality management documentation, but no-
one has talked the engineering teams through these documents or how we are to
work with them. We have a QMS, but implementation of process steps "on the
ground" is difficult to see in the everyday job."*

*"There has not been much information that has been communicated to the staff
within the company in the past few months - especially since we are in the midst
of a downturn in the oil and gas industry. We as Staff need more transparency of
the Company's aims and goals; and the strategies which Company plan to
effectively ensure that we are being operationally efficient."*

"I feel that there is a serious lack of understanding or appreciation of what different business streams with in [OGCom] can provide. There have been several instances where external companies have been engaged when work could have been distributed internally... This is extremely frustrating and does not inspire confidence in the senior ranks of the company."

It should be noted that the comments highlighted above do not reflect the overall tenor of feedback received, which varied in nature between positive and negative comments. The selection above is negative by deliberate selection; in order to provide examples of a particular dynamic; the opinions provided were not universal.

Nevertheless, there appears to have been a tangible shift in general perception within the research period, suggesting that the Company exhibited decreasing competence in Senge's disciplines, and in turn indicating a deteriorating learning culture. It is difficult in this environment to maintain a sense of unity throughout the Company; particularly as redundancy consultations affect more than those eventually made redundant. This kind of disenfranchisement of members resulting from industry crises has been similarly documented in other contexts (e.g. Starbuck 2017).

"The workforce (including myself) relationship with this management team has irreconcilably broken down and the previous 17 years of close working and mutual support have been destroyed over a short period of time."

As this example from a member of one of OGCom's competitors indicates, the effect was also echoed in comments volunteered by members of other oil and gas industry organisations consulted during mixed methods Stage 2.

7.2. Observation 1 – The Effect of Industry Downturn on Culture: Part 2

At the same time as opinions on the unity and coherence of the Company were deteriorating, a different phenomenon was apparent that suggested a contrasting trend in learning culture. As previously discussed in Sections 6.1.1 and 6.1.2, a variety of ideas were tabled and enacted within OGCom that were transformative in nature, challenging as they did the Company *status quo* and traditional range of available responses. These included:

- Changing the geographical distribution of work bid/undertaken.
- Devising low cost training plans to take steps to develop junior engineers (in particular) in the absence of a training budget.
- Diversification into sectors tangential to the Company's main business but which draw on similar skill sets.
- Adaptation of the service model for survey management.
- Undertaking upfront engineering work at the Company's cost in order to help to progress the client's project finance process and thereby secure future work arising on the project.
- Taking on EPC (high risk) contracts for delivery of certain products and services involving direct procurement of materials and vessels; something the Company would normally do only on the client's behalf.
- Launching a Company-wide programme of workshops to consider in what ways the industry might evolve and generate ideas and opportunities for development.

There are insufficient data points here to conclude that there is an increasing trend in transformative learning. However, it was clear from the communications surrounding the announcement of these ideas and subsequent internal discussions that they were catalysed partially or wholly by the industry downturn and/or the need to generate more work for the Company. This would suggest that the same industry pressure that seems

to have precipitated a decline in morale and Company unity also gave rise to instances of learning of a greater degree of profundity. This is consistent with Terreberry's (1968) observation that organisations may only scrutinise themselves where external forces "threaten their survival".

As was discussed in Section 2.4.3, whilst the concept of triple-loop learning is elusive in that (a) it is poorly defined and (b) it is unclear whether it is attainable at all, a clear distinction is apparent however between the concepts of single and double-loop learning. It is broadly accepted that the former refers to a change at process level and the latter referring to a change or challenge to underlying assumptions and norms. As discussed in Section 2.4.3, the idea that "higher loop" learning is necessarily "better" may be persuasive but it has yet to be proven or universally accepted. If nothing else, there are instances in which the best solution is in fact the most obvious, accessible one. What can be said conclusively about the benefit of the different learning levels is that a greater range of responses to a particular observation better supports the goal of learning, notwithstanding that the benefit of learning itself is open to dispute (see Section 2.4).

Whilst it would appear that industry pressure has enhanced learning then, Henderson's (1997) warning stands regarding the caution required to ensure that any changes proposed, whether resulting from single or double-loop learning, will lead to intended outcomes. Learning results in change, and any change made to a complex entity such as an organisation may have unanticipated emergent consequences. The greater the change, the greater the potential for unforeseen effects; either positive or negative. Incremental (non-transformative) change can be represented as a relatively small step away from the trajectory of the original practice of the organisation but within the bounds of that practice, as shown in Figure 7.4.

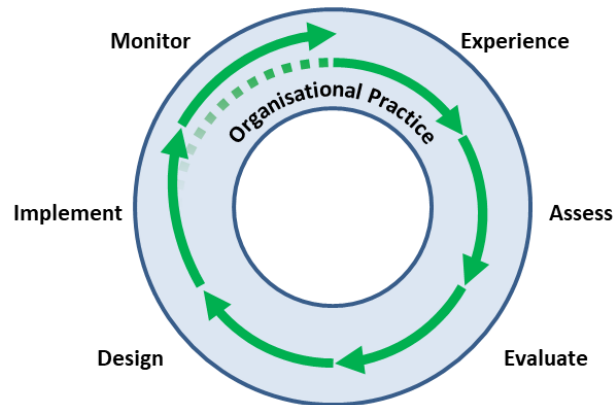


Figure 7.4 Incremental Change Cycle

Transformative change, which alters the organisational norms, beliefs and principles within which practice is conducted, requires a larger step away from the established path, as illustrated in Figure 7.5.

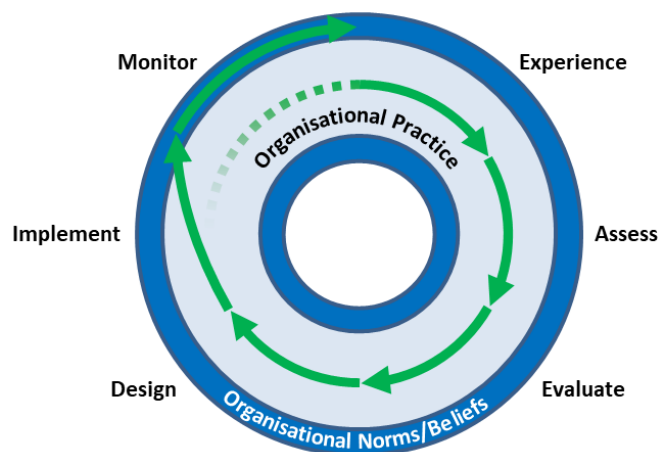


Figure 7.5 Transformative Change Cycle

As well as the transformative leap being more experimental in nature, and more vulnerable to adverse effects, it is also less retractable and the likelihood of reverting to the original position is lower. It is proposed that the optimum position for the organisation is to be capable of both process improvement and value/assumption review, and to allow the learning opportunity arising to determine which is appropriate for that instance. The study of a company forced outside its comfort zone by external factors has provided an interesting illustration of why higher-level transformative learning is inherently riskier and does not necessarily mean better learning.

7.3. Observation 3 – Cultural responses of different industries

Other sections of this thesis have detected differences in the responses of organisations from different industries towards learning cultural factors. Firstly, in Section 6.4 data was presented that indicated differing levels and variations in support for organisational interests between industries. In Chapter 8 further discrepancies are shown between the relationships between support for organisational interests and for group interests apparent in the different industries (see Section 8.2). Overall it is concluded in response to RQ2.3 that the challenge to organisational learning identified as “the motivation gap” in Chapter 6 affects different industries in varying degrees of magnitude.

Chapter 6 also speculates on possible reasons for these differences, citing comments volunteered during mixed methods Stage 2 that suggested altruistic factors typically motivating both medical and educational workers in their vocational endeavours. Discussions were held with the principal contacts from the Stage 2 companies after the surveys had been completed and results analysed, in order to gain further insight into the trends observed. These discussions were held with far too small a sample to be considered representative and were in any case not subject to methodological control. Nevertheless, they provided some interesting impressions of the industries in question and the opinions that members held about their organisations.

In the education sector, it has been shown in Section 6.4 that teachers appear to be commonly motivated by the achievement of positive outcomes for their pupils, and that their organisation is seen as critical to delivery and maintenance of these benefits. This effectively binds each teacher (assuming they share this motivation) to their associated institution and gives them a vested interest in the fortunes of the collective. The main challenge to coordinated organisational learning (it seemed from the discussions) was that uniformity of practice is hard to establish.

Each teacher effectively works alone or in very small groups during their interaction with their pupils. Whilst there are plenty of opportunities for interaction and discussion of ideas with colleagues, there is no direct visibility of a commonality of practice. The problem common to the engineering consultancies (i.e. generation and sharing of ideas and observations) is not typically a bottleneck for teachers, who may constantly be refining and adjusting their own practice (which is broken down into neat, annual cycles). Neither, it seems, are teachers hesitant to accommodate ideas from different sources. One commented during Stage 2 that they were keen to:

"...visit other schools [and] engage with social media to share and magpie ideas."

The difficulty is more that teaching is a service that is very personal in nature, and what works for some teachers may not suit others. The (modified OADI) learning cycle can represent this situation as shown in Figure 7.6.

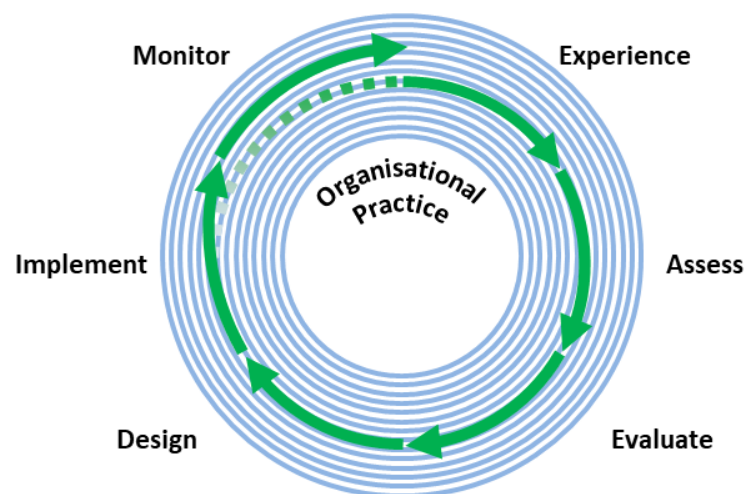


Figure 7.6 Learning Cycle for the Education Industry

Organisational practice is represented here as a series of parallel channels rather than a coherent whole. Changes achieved typically influence only isolated channels rather than altering a common pool of practice. It should be noted that this is not necessarily a “problem” for the industry; it is just what appears to inhibit learning *as a collective entity*. It may be the case that schools need this kind of variation in delivery because of the subjectivity of the pupils’ experience. Some pupils may be inspired by one

teaching style and others by another.

For the medical professionals, (as discussed in Section 6.4) altruism, in the form of patient welfare, appeared as a common motivator. Again, such welfare requires a coordinated and effective organisation. Unlike schools however, hospitals, trusts and the NHS itself are large and unwieldy organisations, and medical practice is tightly controlled by regulation and established best practice. Where ideas and learning opportunities arise, experimentation is (understandably) prohibited on the grounds of ethicality, risk and consequential litigation. This is not to say that there is no possibility of implementing change at a localised level, but the great majority is delivered from a centralised decision-making function. It would also be difficult to make changes at a hospital or trust level because the wide range of shift working patterns impede collective communication.

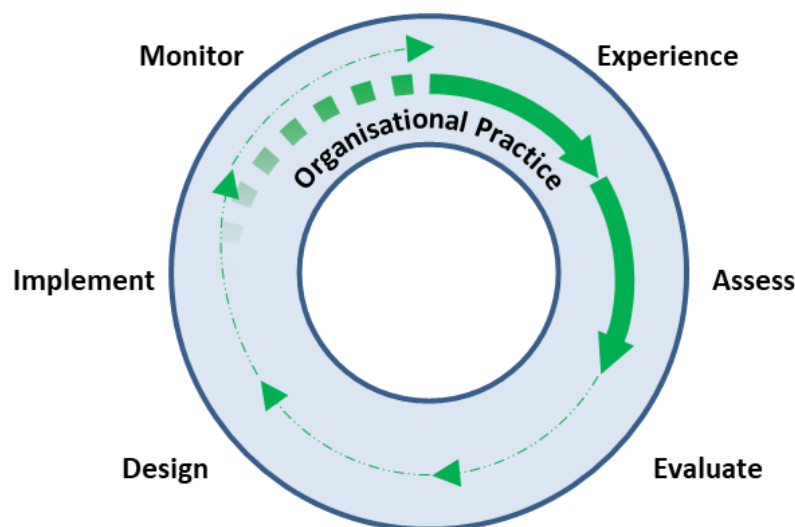


Figure 7.7 Learning Cycle for the Medical Industry

The medical situation is portrayed by introducing a bottleneck between “Assess” and “Evaluate”. It may be the case that many ideas are reviewed and only a few chosen (i.e. a bottleneck at “Evaluate”) but the perception amongst those consulted is more that only a small proportion of ideas will make it to centralised review. Again, there are good reasons why medical practice is subject to rigorous control, and this “problem” is

not necessarily something to be resolved.

The adapted models shown for the education and medical professions are highly speculative and based on only limited anecdotal evidence. They are used to portray the different ways that organisational learning may be impeded depending on the learning culture standards prevalent in different industries. Considerably more data and opinion would need to be gathered to substantiate either model.

7.4. Expansion of the “Lemniscate” Model

These observations suggest two key pieces of intelligence about learning culture. The first is that learning culture modifies the process of organisational learning in that it affects the execution of each of the different stages of the cycle (assuming one is operating). Where morale and perceptions of organisational unity are low, members become disinclined to share, cooperate and support organisational interests in general (at ground level/levels at least). Furthermore, the profundity of learning is also modified by culture, in that the likelihood of transformational solutions being considered may increase or decrease with cultural condition. It should be noted however that “higher-level” learning is not necessarily an indicator of learning culture strength/health since such learning encompasses greater risk, and risk-taking may either be calculated or reckless.

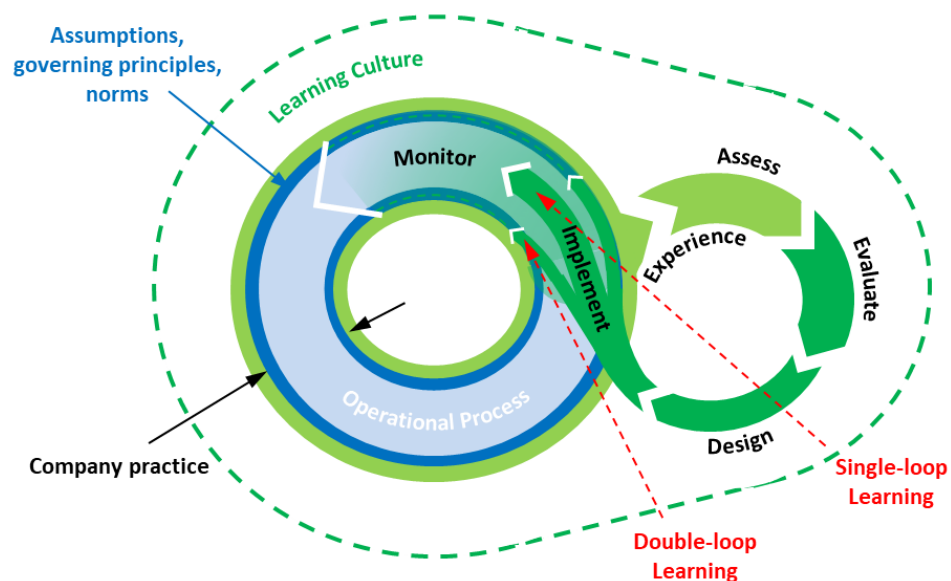


Figure 7.8 Elaborated “lemniscate” model

Figure 7.8 shows an elaborated version of the “lemniscate” model proposed in Chapter 5, in which learning culture is shown as a field surrounding both the learning process and organisational practice and principles. The different paths of change resulting from single and double-loop learning diverge at the implementation phase (although they originate in “Design”) and colour practice and principle respectively.

If the management-level entity (and supporting team) are open to the possibility of looking outside procedural solutions and challenging governing principles then higher-level learning can occur as appropriate. This is not to say that this is always the most fitting response; the process as a whole should be capable of generating both incremental and radical change. This openness, or otherwise, to scrutinise norms and assumptions, the degree of participation and inclusiveness in the design process, the way in which implemented changes are received within the organisation, the import and recognition that is given to the learning process in general; these are manifestations of the organisation's learning culture.

The second piece of intelligence is that an organisation's learning culture (and perhaps culture in general) is influenced by its operating environment, context and purpose. This quality of learning culture is illustrated by the dotted line, representing a permeable boundary. Marked differences have been shown between attitudes and barriers to learning of organisations from the industries consulted during mixed methods Stage 2; it is hypothesised that each different industry/setting will impose certain learning culture characteristics on its member organisations. This is an avenue that merits further exploration since it is generally assumed that organisational learning presents the same challenges to all types of organisation. This may have led to some unwarranted generalisations in past models and theory.

7.5. Safety Culture Parallels/Lessons

In Section 2.3.2, a parallel was drawn between learning culture and safety culture, the latter being a key focus in OGCom's parent industry. If the industrial context is a major influence on cultural aspects of its member organisations, then it is reasonable to consider how the wider industry may support the development of culture that is beneficial to those members (as learning culture is accepted to be).

A focus on safety is ubiquitous amongst companies working in European countries and other industry-leading countries on oil and gas developments. Safety will typically feature prominently in companies' core values, mission statements and communications with their workers. An interesting side effect of this focus is that it is difficult for oil and gas installation companies to work in other industries, since their processes and procedures are written to serve their core business and the associated costs will not often be borne by sectors with more relaxed standards. Nevertheless, safety is a well-established watchword. This was not always the case however.

As mentioned in Section 2.3.2, the oil and gas industry has experienced a series of major, high-profile disasters causing extensive losses of life and severe environmental consequences. These disasters have often led to substantial changes in regulations affecting both the immediate industry and others considered high risk, for example:

- The Piper Alpha disaster of 1988 was responsible for the deaths of 167 people and resulted in the public inquiry chaired by William Cullen. Cullen's report made numerous recommendations and led to the establishment of the Offshore Installations (Safety Case) Regulations 1992.
- The Exxon Valdez oil spill of 1989 discharged 10.8 million gallons of crude oil into the sea and caused the International Maritime Organisation to introduce comprehensive rules governing marine pollution (MARPOL) via a number of conventions.

- The *Herald of Free Enterprise* disaster (not an oil and gas industry event but a marine event at least) of 1989, in which a passenger ferry sank causing the loss of 193 lives, resulted in the establishment of the Marine Accident Investigation Branch (MAIB) of the UK Department for Transport.
- The Texas City Refinery explosion of 2005, which killed 15 workers and injured over 180 others, precipitated three enquiries and the creation of API (American Petroleum Institute) Recommended Practice 755 intended to prevent worker fatigue.

Such regulatory changes have had dramatic impacts on safety practice and culture within the industry. It is not possible to compare the scale of these changes to any others affecting aspects of organisational culture, but there are many other examples of legislation bringing about widespread changes in particular industries (e.g. The Building Act 1984, The Water Industry Act 1991, The Care Act 2014; to name but a few). Does this mean that a significant change in learning culture can only be realised by changing legislation?

In practice it is hard to see how such legislation would work. Safety legislation mandates some practices that are very specific in some instances (e.g. use of certain items of personal protective equipment in certain circumstances) and less so in others (e.g. the description of duties of different stakeholders under the Construction (Design and Management) Regulations 2015). However, there are clear, objective measures that can be used to demonstrate both compliance and effectiveness of measures put in place (e.g. number of accidents, observations or lost time incidents (LTIs) recorded in a period). Were certain learning practices to be made mandatory by legislation, it would be difficult for an organisation to publish and defend its “learning record”. Moreover, as discussed in Section 6.5, mandating practice does not deliver the committed engagement of practitioners; there is no reason to think this would be different on an industry scale.

It should also be remembered that, as discussed in Section 2.4, one of the stated aims of learning interventionists is to achieve strategic advantage over business rivals (in commercial contexts at least). An industry-wide improvement in learning would dilute the possibility of any such advantage. It could enable a particular industry to make great strides, deliver new innovations and reduce collective costs to the advantage of all, but in so doing the balance of the field of competitors would almost certainly change, with unpredictable effects for any individual organisation.

7.6. Summary and Conclusions

If it is the case that learning culture is influenced by industry-level characteristics and forces that are outside of the control of any particular organisation, and if it is accepted that the Learning Organisation represents the theoretical apex of learning culture, then it follows that a Learning Organisation intervention must be designed with an understanding of the context-specific challenges, and to read and accommodate any contextual dynamics. It would be unfair to say that Learning Organisation theorists have been oblivious to the importance of industrial context, but equally it must be acknowledged that most guidelines written have the organisation as a focus and not its environment. The holism of the approach required must consider the “whole” to be more than just the organisation itself.

Susceptibility of learning culture to external influence also provides an explanation to some of the critiques made of Learning Organisation theory discussed in Section 2.3. It would explain, for example, why it is possible for companies to lose their Learning Organisation status, and why no common approach has emerged that finds repeatable success in different contexts. It may also be at the heart of why Learning Organisations have not been more widely achieved, as questioned by (for example) Seddon and O'Donovan (2010), because commercial organisations at least exist in a complex state of interdependency and some will always be down while others are up. This endorses the Developmental perspective to the Learning Organisation identified by Dibella and Nevis (1998) in that it suggests that organisational development is an organic process that is a function of characteristics such as age and maturity, as well as industry pressures and undercurrents.

As with learning culture, any attempts to develop and enhance organisational learning in a particular setting should be mindful that the nature of the challenge may be very different for organisations of different context and purpose. The portrayals of the

characteristics of the different industries discussed in this chapter are snapshots only and no doubt miss a lot of nuance, but nevertheless there are reasonable grounds to challenge the assumption that the challenges of organisational learning are common to all. This highlights the importance of using a model for learning that is able to reflect the different characteristics and blockages observed. It also makes the case for more extensive investigation into both the mixed methods Stage 2 industries and many more, to verify that there are indeed different challenges experienced and to further test the ability of the “lemniscate” model to relate to each.

The key points made in this chapter are:

1. A downturn in industry fortunes can have a deleterious effect on learning culture, and may be only one of a number of environmental factors that have such influence.
2. Some aspects (or amplitudes of aspects) of learning culture appear to be common within certain industries and also variable between industries.
3. As a context-dependent condition, learning culture is hard to establish and harder to maintain. Any attempts to establish or develop organisational learning that omit to consider the context are therefore unlikely to succeed.

8. Outcome 4: The Dynamic Group

Of the three interactive entity levels commonly identified in organisational learning literature (individual, group and organisation), the group level is the least explored. Individual learning is the base currency, organisational learning is the goal. Group learning sits somewhere between the other two, with an unclear contributory role and murky interfaces. That it is important is generally recognised, but why it is important is less clear. The early stages of research gave a strong indication that the group (however interpreted by the individual) and its associated learning processes are very different from organisational mechanisms. On further inspection, it appeared that the members identify and align more closely with self-organised groups than they do with the wider organisation and are more likely to take learning actions in the interests of the group. This chapter summarises evidence supporting this conclusion and considers implications for learning practice.

Group Learning is a supporting but somewhat peripheral actor both in learning theory and organisational learning theory. It appears in a number of guises, including:

- In (individual) learning theory, and therefore with no comment on any relationship with the organisation level, it appears as a strategy to enhance or complement the learning process. Cooperative, collaborative, problem-based, and team-based learning are identified as distinct methods (e.g. Davidson *et al.*, 2014).
- In organisational learning theory, where a group-based activity (e.g. a project) is recognised as a learning opportunity (e.g. Cavaleri and Fearon, 2000). It should be noted that this scenario is also considered a fundamental challenge to organisational learning due to fundamental characteristics of project-based industries (e.g. Bartsch *et al.*, 2013)⁶³.

⁶³ Although Cavaleri and Fearon (2000) argue that PBOs can be a natural seat of organisational learning provided “Intelligent Project Management” (IPM) is practised.

- As a necessary facet or characteristic of a Learning Organisation (e.g. Senge, 2006).

Whilst some authors focus on group learning as a key sub-dynamic of organisational learning (Balbastre *et al.*, 2003; Kush *et al.*, 2012), such voices are few and they do not explain why group level participation should necessarily be any easier to achieve than at organisational level. In the former it is researched as a contrast to and means to enhance individual learning. In the latter it is typically recognised as either a facet or characteristic of a Learning Organisation rather than a significant dynamic in its own right. The sections that follow describe how group learning emerged from the research as an important dynamic in its own right.

8.1. Observation 1 – Allegiances within the organisation

This section considers qualitative evidence gathered during mixed methods Stages 1 and 2 which gives an indication as to the relationship between group learning and organisational learning. It is induced that self-organisation into groups within an organisation may be a natural phenomenon, and that, partially consequentially, identification of members as a single organisational entity is poor or perfunctory. Moreover, the interests of the group may be taken on by group members as a motivating factor at the expense of the interests of the wider organisation.

During mixed methods Stage 1 participants were asked, amongst other things, (a) whether they identified as part of a group or community within the Company and (b) if so, how large a group. The questions were asked to test the idea that individuals who felt like they were part of a social sub-group would be more likely to feel an allegiance to the organisation as a whole. This supposition is supported in the literature by studies that, for example, have linked group interdependence with job satisfaction (Van Der Vegt *et al.*, 2001); organisational culture with job satisfaction and organisational commitment (Lok and Crawford, 2004); and team empowerment with team performance (Jiang *et al.*, 2016).

Identification with a group within the Company varied across disciplinary groups, departmental groups, project teams and social groups. Some (40%) participants allied with more than one or expressed a kind of transience depending on the projects/activities on which they were engaged. Nobody claimed that their primary association was as a member of the organisation as a whole, either at Company or Group level. What was also interesting about the responses was that groups with which the participants reportedly identified related as often (50%) to peer groups rather than disciplines or departments. Examples of such groups were:

“Young engineers working on projects for [a particular large client].”

"The graduates [with whom I joined the Company]."

"...my friends on the third floor."

What this suggests is that semi-social groups will appear in the absence of, and perhaps also in contradiction of, organisational subdivisions introduced by the Company.

The potential power of the group unit to deliver benefit for the wider Company was also acknowledged:

"Onshore are a tight knit group. The majority aren't in it for themselves; they work together. [It's a] big pull for [the Company]"

"[We are] all in one admin group. It's an important cog in the function of the Company."

During mixed methods Stage 1, where comments were invited on any perceived difference between allegiances to Company and group levels, it was volunteered that:

"I feel more associated with the group than the Company as a whole. This may be due to the fact the Company is involved in wide, varied nature of business, but the group I'm involved with is smaller and more focused on areas involving my skillset."

"...[this questionnaire] made me realise that I feel more related to the project team I belong to rather than the Company I am in."

The participants who identified themselves primarily as part of relatively small, disciplinary, fairly autonomous groups expressed the strongest support (qualitatively) for the idea that working for the common good benefited the individual. Tellingly however, the common good that they generally identified was that of the group rather than the Company as a whole.

If this dynamic is common, it suggests that motivation towards and identification with the organisation as an entity is a subordinate function of group co-motivation and adhesion. This tallies well with recent research that demonstrates the impact of local context (groups and line management) on job satisfaction and employee experience (Ruch *et al.*, 2016; Huo *et al.*, 2018; Talukder *et al.*, 2018). Each member has an

experience and perception of the organisation that is dominated by their localised community and interactions thereof. Support for organisational interests is delivered as an almost inadvertent consequence of group participation.

It follows perhaps that people in the kinds of quantities gathered by large organisations are not inclined or capable of self-organisation as a single, large entity or even logically sub-divided large entity. People entering a particular social context (such as a large organisation) will self-organise into groups of sizes and nature that suit them socially and vocationally, and without regard for whether such groups offer any functional support to the company.

The disparity between motivation to support group interests and to support organisational interests is explored further in the section that follows.

8.2. Observation 2 – Team spirit

This section reviews the evidence compiled during mixed methods Stage 2 in support of the difference in motivation levels between group interests and wider organisational interests. RQ2.2 speculates as to whether the “motivation gap” observed between organisational members’ support for collective and for individual interests is also found at the group level, and how the two gaps compare. It is found that the gap is common to the different participating industries and also that the magnitude of the gap varies with industry.

Section 6.4 introduced a measure dubbed the “Organisational Motivation Factor” (OMF). Since the Stage 2 survey included comparable questions regarding motivation to support group interests, it is possible to derive a sister variable along parallel lines; the “Group Motivation Factor” or GMF. As the OMF shows a gap between motivation to support organisational interests and more self-serving interests, so the GMF shows a gap between group drivers and the same baseline.

Figure 8.1 shows the mean, minimum and maximum OMF (left in pair) and GMF (right in pair) for the three industries that were represented during the survey. It can be seen that in each industry the motivation to support group interests (as measured by the GMF) is markedly higher than the OMF; for Industry 3 (Education) the lowest GMF even exceeds the upper bound of the OMF. It should be remembered that a factor of zero represents parity with self-interest. Positive values would suggest that the relevant collective (group or organisation) is more important to industry members than the self-interest baseline.

It is important to note that the factors OMF and GMF are uncalibrated, so the absolute differences between the two cannot meaningfully be measured. However, it is evident that the size of the gap between the two appears to vary between industries. In the engineering industry, for example, the GMF approaches zero (indicating strong

motivation to support group interests) whilst the OMF is significantly lower. The range of each set of values reinforces the step between the two, with the maximum OMF remaining negative and the GMF range being centred approximately on zero.

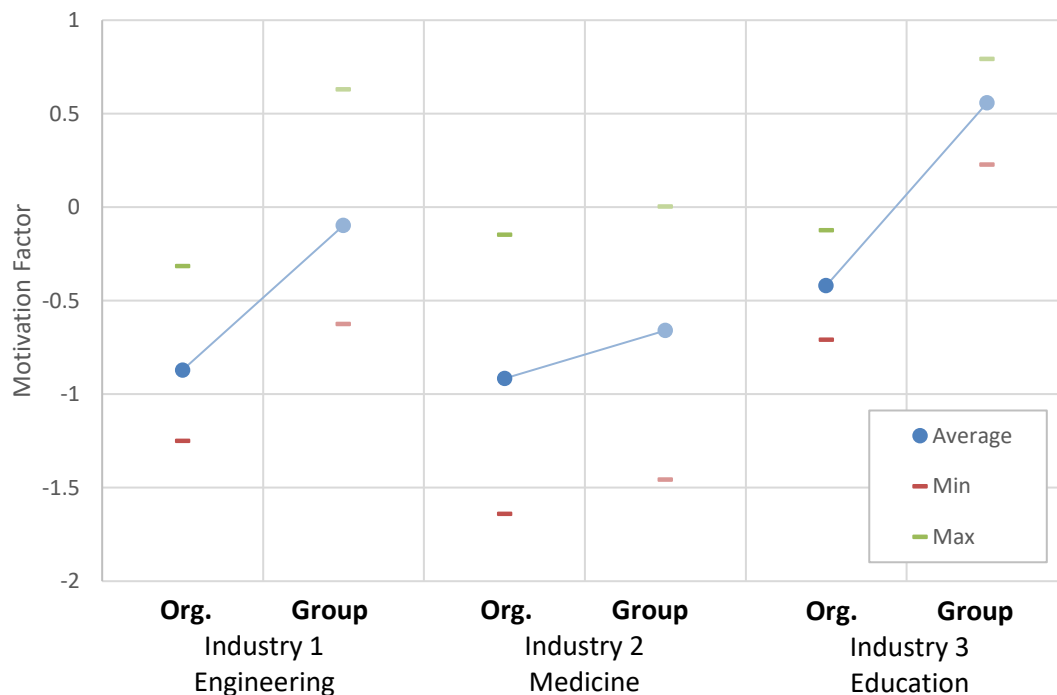


Figure 8.1 OMF and GMF Comparison for Three Industries

The difference between the average levels of support for the interests of organisation and group is less dramatic for Industry 2. For both factors, the upper bound of the range of responses approaches zero indicating far uniformity of opinion. Industry 3 shows the greatest degree of consensus, with close grouping of maxima and minima for both OMF and GMF. The average OMF is the highest of any of the industries, but the most significant feature is that the entire GMF range is positive, suggesting that group interests are amongst the most compelling drivers for members of the teaching profession; seemingly more so than self-interested ones.

The mixed methods Stage 2 survey provides an alternative measure for corroboration of this phenomenon, in that the survey asked participants how likely they were to take certain actions in the interests of supporting (a) the organisation and (b) the group. The averaged scores for each are shown as “Motivation Scores” in Figure 8.2 allowing a

similar comparison of the differences in motivation levels between the industries. Again, it can be seen that group interests receive greater endorsement than organisational ones for all industries.

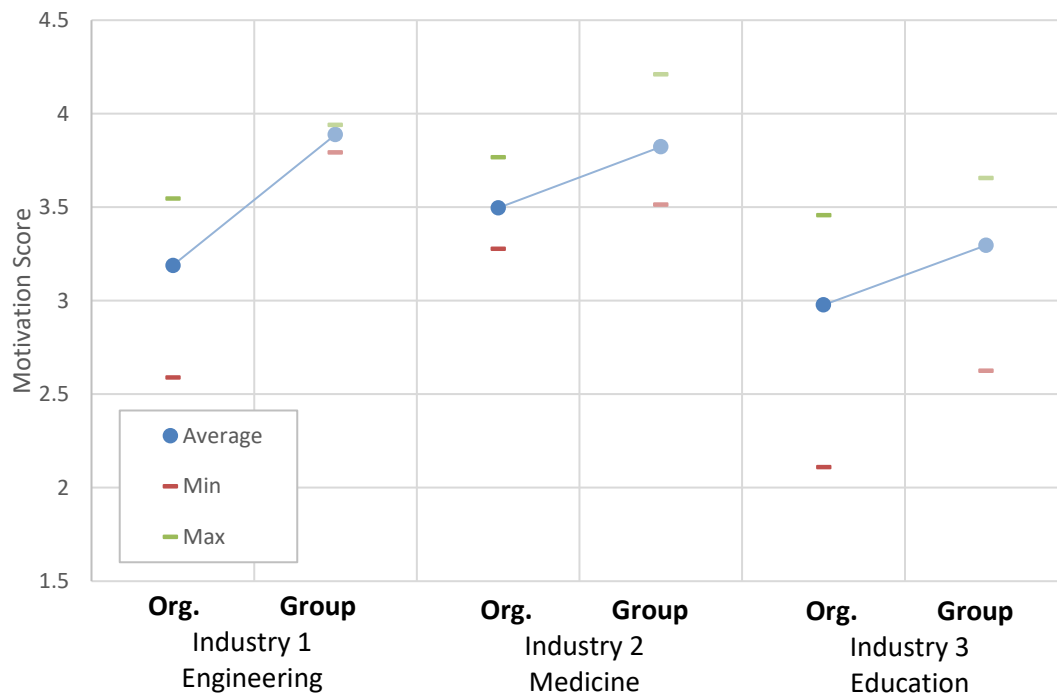


Figure 8.2 Motivation Score Comparison for Three Industries

Since there is no baseline with which to relate in this case, it would be potentially misrepresentative to compare the results shown in Figure 8.2 with those of Figure 8.1. It is interesting to note however that the grouping of the scores is quite different this time, with the greatest degree of uniformity being shown in Industry 2 (which was previously the least focused) and the lowest in Industry 3 (conversely, formerly the most focused). In Industry 1 the scores for organisational motivation are distributed; those for group motivation are tightly grouped.

This can be made still more relevant to organisational learning by comparing the scores for the responses to the question of how likely participants were to “Share observations with others that could improve collective performance of the organisation/group”. In all cases and across all industries, this was more likely to be done on behalf of the group than the organisation by factors ranging from 6% to 38%.

8.3. Observation 3 – The image problem

The mixed methods Stage 2 data are analysed to detect reasons why organisational motivation is lower than group motivation (since the two are directly comparable in relation to a common baseline of self-interest). It appears that the group entity is both a stronger driver to act in shared interest and a more cohesive, supportive association than the wider organisation. The case is made that this results from a perception, beyond a certain hierarchical size, that “the organisation” is the decision-making tier of same rather than the workforce as a whole. Supporting “company/organisational” interests is therefore taking efforts to benefit a group to which the worker does not belong. This explanation is considered in the light of the feedback received from Industries 2 and 3 and found to be a good fit for the equivalent dynamic in those contexts.

In exploration of RQ2.2 and by means of the mixed methods Stage 2 survey, a series of questions were asked for which the participants had to score via a Likert-type scale firstly an aspect of group cohesion (e.g. Your identified group is mutually supportive”) then an equivalent aspect of organisational cohesion (e.g. “Your company/organisation as a whole is mutually supportive”). Averaging the scores for the group questions and organisational questions separately gave “Cohesion Scores” for the two conditions. These could then be compared and the relative amplitudes used to illustrate which and to what extent one type of collective enjoyed a greater degree of cohesion than the other.

Figure 8.3 plots the average group and organisational scores for the companies of the three different industries consulted. It can be seen in all instances that group cohesion is perceived to be higher than organisational cohesion, and that the effect is more pronounced in different industries.

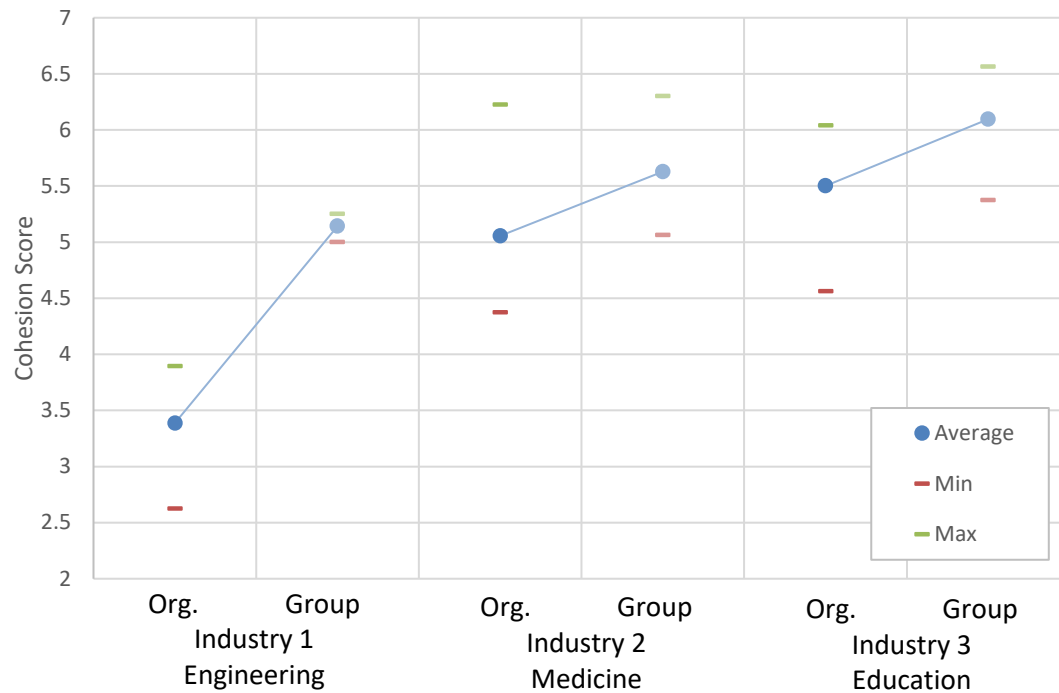


Figure 8.3 Cohesion Score Comparison for Three Industries

It is perhaps unsurprising that people find a greater sense of cohesion within their immediate social or work-related groups than with their wider organisations. A large organisation after all consists of far more people that are strangers to any particular member than allies. It is difficult to find any sense of meaningful common ground or shared purpose between people who have never interacted directly with one another.

The comments volunteered during mixed methods Stage 2 held some clues as to why there might be a sense of disassociation with the organisation.

I feel more associated with the group than the Company as a whole. This may be due to the fact the Company is involved in wide, varied nature of business, but the group I'm involved with is smaller and more focused on areas involving my skillset.

However, the studying the effects of the industry⁶⁴ downturn (as discussed in Section 7.1) suggested that a subtler influence might be at work. During this period, comments made in the action research phase periodic survey became increasingly vitriolic as pay cuts and the threat of redundancy took effect. The comments were directed

⁶⁴ Industry 1

occasionally at the decision-making level of the Company⁶⁵, “corporate”, the level from which policy emanates (or is believed to emanate, since the actual source of decisions is often unspecified). More commonly though “the Company” was invoked as the source of policy and strategy:

“...uncertainty in the industry leads to below average job security and I don't think this issue is addressed too well by the company.”

“We as Staff need more transparency of the Company's aims and goals; and the strategies which Company plan to effectively ensure that we are being operationally efficient.”

“With the falling oil price, the company has made an effort to communicate to all employees how we need to attempt to become more efficient...”

It would seem that the entity brought to mind by “the Company”, at least in certain contexts, is not “people like me/us” working in different locations and circumstances or even the organisation as a whole sum of its parts; rather it is the executive decision-making tier or tiers. When strategies are unveiled, they are unveiled by “the Company”. When redundancies are imposed, they are imposed by “the Company”. Asking people to do things “for the good of the Company” is seen as providing benefit not to the people/the workers but to the corporate paymasters. Understandably then, when it is perceived that the corporate tier is not acting in the interests of the workers, the workers may be disinclined to expend additional effort for “the Company”.

In the engineering consultancy sector (for one), “the Company” or the organisation has something of an image problem. The “common good” or “common interest” cannot be meaningfully invoked as a driver unless there is a genuine sense of shared interest. It is worth noting that the OGCom board was criticised for awarding substantial pay raises to its directors during a three-year pay freeze for its workers. One of the other Industry 1 companies from which mixed methods Stage 2 participants were drawn was similarly disenfranchised (as mentioned in Section 6.4). Section 6.4 also demonstrates

⁶⁵ It should be noted that the conditions of the wider industry were equally blamed.

that there may be a correlation between organisation size and lack of support for organisational interests, perhaps because a greater number of tiers in the hierarchy increases distance between “the workers” and “the Company”.

What, then, of Industries 2 and 3? With the NHS this is a slightly more complicated question because the answer depends on whether “the organisation” is the NHS as a whole, the relevant NHS Trust, or the hospital for which participants work. For one of the participant groups (but for some reason only one) the whole NHS interpretation was applied. This group reported the lowest OMFs and in fact also GMFs. The other participant groups read “the organisation” as their respective home Trusts and were self-reportedly more altruistic as a result. As previously discussed, there is a well-publicised degree of tension between the workers of the NHS and their decision-making tier. It is difficult to find objective evidence of this relationship, aside from reports relating to specific points of contention. However, the debriefing conversations held with survey facilitators in Industry 2 confirmed a deep distrust of “the management” both at a political level and at a perceived executive level.

Industry 3 participant groups come from far smaller organisations to the point where the smaller ones approach the imprecise dividing line between the group and the organisation as defined herein. This helps to prevent “the organisation” becoming too far removed from the worker level; there can be only a tier or two of hierarchy at most. However, and as previously discussed (see Section 6.4), it appears that altruism is a key factor in the overall vocational motivation of the average teacher. This altruism relates both to the pupils and also to the wider organisation, which must prevail in order for the pupils to derive any lasting benefit from attendance.

As an internal observer of the growth of OGCom over the past seven years, it is clear in retrospect that the point at which the corporate level became an unassailably distant and distrusted tier of the Company was when it moved (in the case of some executives) or surrendered decision-making power (in the case of others) to a location far removed

from the subject office. Since this time there was no possibility for the majority of the workers to have any direct interaction with the people who ultimately made the decisions about their vocational lives. They became effectively de-humanised, and it was perceived that the workers were de-humanised to them. There is no reason however that this could not happen equally in a sufficiently large single location/office, particularly where partitions or floors exist between tiers.

8.4. The Role of Group Learning

The review of literature dealing with the identity of the “subject” (or subjects) of organisational learning in Section 2.1 found clear (if contradictory) views on individual learning and the meaning of organisational learning; what was less clear is the role of the intermediary group level. Group (or team) learning is generally recognised as important, but why it should be so and its relationship with learning on the other two levels is often overlooked or assumed. Senge, for example, describes team learning as “...a *[potential]* microcosm for learning throughout the organization.” (Senge, 1990), the implication being that group and organisational learning are identical processes applied to different sized collectives. Why, then, should the former drive the latter? Is one a requisite for the other or are they the same process viewed at different scales?

The observations made in the earlier sections of this chapter warrant a brief return to the available literature to clarify this point. Dillenbourg *et al.* (1996) provide a commendable summary of the progression of theory (to the time of publication) and associated research paradigms on collective learning, noting that the focus shifted from examination of the functioning of individuals within a group to analysis of the group as a unit itself. Studies conducted under different paradigms have sought to establish (with varying degrees of success):

- Whether collaborative learning is more efficient than learning alone.
- The conditions under which collaborative learning is more efficient than learning alone.

Essentially, the aggregate outcome was the conclusion that collaborative learning (in this context, learning in groups or teams; not organisational learning) could enhance the process of individual learning under certain conditions. The models for both types of learning broadly aligned with the experiential model; observation, reflection, experimentation; aligning group learning processes with individual. Contrastingly,

Robinson *et al.* (1997) table the term “the learning unit”, considering it and the associated learning process attributable to groups, teams and organisational divisions of any and all sizes right up to the parent entity.

More recently a number of authors have diverged from these traditional paths to explore the relationship between group and organisational learning from different perspectives. Dayaram and Fung (2014), for example, identify the role of group learning as mediator between individual learning and organisational learning, in that individual learning activities catalyse group learning which in turn promotes knowledge transfer and experimentation at an organisational level. Sisson and Ryan (2016) propose eight different “ways to learn” within an organisation but consider them equally (although differently) applicable to all three level entities; individual, group and organisation. Gil and Mataveli (2017) study the effects of enhancing group learning, not on organisational learning but on the related variable of learning culture⁶⁶; finding a correlation but stopping short of providing an explanation of why this should be the case.

In Section 5.1, it was observed that one of the reasons why organisational learning cannot exactly mirror individual learning is that certain elements of a reflective cycle must be performed centrally when an association is too large to assemble all members for collective review. In a smaller group however, this need not be an impediment. In fact, there is nothing stopping all the activities required for individual experiential learning from being conducted on a collective basis. The one exception depends on whether the group (if part of a larger organisation) has sufficient autonomy to make decisions about which changes to enact.

A second factor that separates organisational learning from individual learning, as discussed in Chapter 6, is motivation. Motivation is not an issue for individual learners,

⁶⁶ Herein considered approximately synonymous with the Learning Organisation; see Section 2.3.

as the process is involuntary (as well as voluntary), and there are in any case direct and tangible benefits to the learner. Organisational learning relies heavily on the agency and altruism of its members, neither of which can be relied upon. As discussed in Section 8.2, this issue is at least partially alleviated at group level, where a commonality of interest is better established. Again, this paints the group learning process as closer to individual learning than organisational.

In practice, group learning cannot be as instantaneous or continuous as individual learning, since it will rely on bringing members together to engage in learning cyclic activities. The individual members will continue to reflect, assess and generate ideas at a faster rate, but they may also be dissuaded or inspired by interaction with the group and the collective set of interpretations and ideas discussed. This relationship is imagined as a series of small cogs concurrently and collaboratively driving the rotation of a larger gear at a slower rate in Figure 8.4.

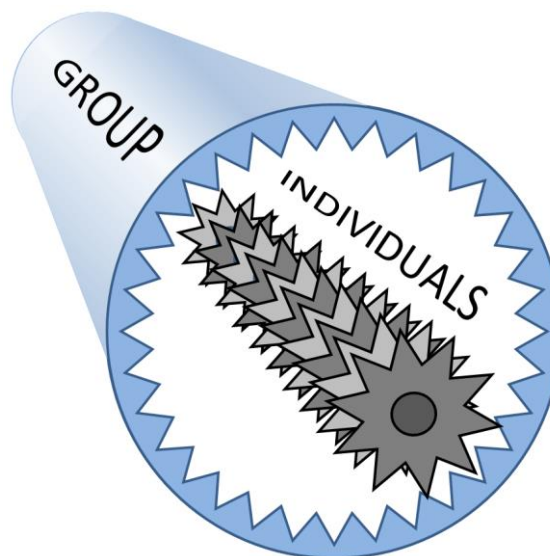


Figure 8.4 Interaction between individual and group learning cycles

Learning at group level may not be as automatic as at individual level, but it may potentially achieve the best possible approximation: habituation. If the group can establish such collaborative activities as fundamental to their operating process and thus habitual, the collective cycle may be perpetuated with relatively little effort. It

should be noted too that group learning can synchronise and magnify individual learning efforts by sharing and providing focus to reflective and planning activities. This is what allows group learning to surpass individual learning; the possibility of drawing from the experience of others to make greater, or better, leaps.

As the size of the group grows there must come a point at which it is no longer practical to involve all members in the same reflective forum (and in fact where co-motivation is harder to achieve); at this point the challenge becomes one of organisational learning rather than group learning. That there may be a threshold size is occasionally acknowledged in the literature (e.g. Gustavsson and Harung, 1994) but remains elusive; as might be expected given that there is no reason to think such a threshold remains constant regardless of group content and enterprise. Studies exploring “optimum” team size may focus on groups established to undertake a particular task (e.g. Akinola and Ayinla, 2014) rather than for social cohesion and co-identification, or learning effectiveness.

In a large organisation, organisational learning may effectively “piggyback” group learning by harnessing its motivation and intention. In practice, this may take the form of allowing a central management function access to the observations and ideas raised and discussed at group level, in order to assess whether they may be useful across the wider entity. Alternatively, if groups are allowed to autonomously test theories and experiment with practice, it may mean that ideas trialled by groups are selected for wider roll-out within the organisation. Figure 8.5 adds this additional dimension to the cog illustration. Organisational learning is driven by group learning, but the contact between the two is not mechanical and the transmission is therefore imperfect. However, without the intermediary group level of learning, individual learning would achieve far lower traction to turn the outer ring.

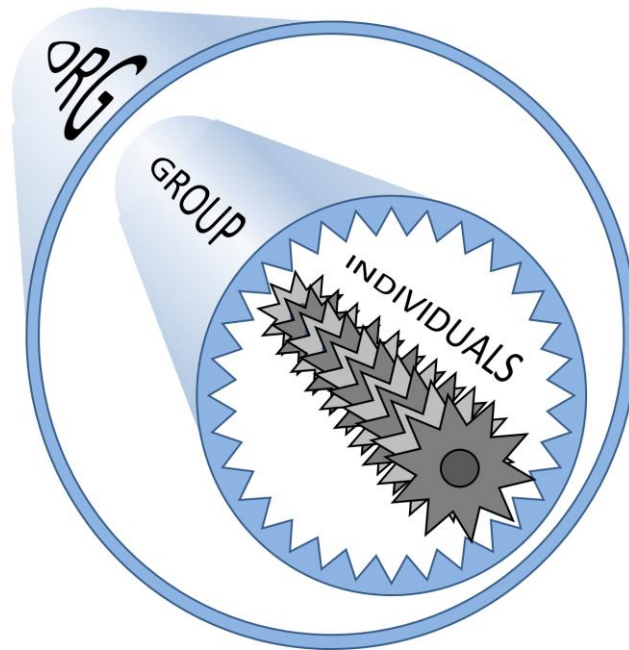


Figure 8.5 Interaction between individual, group and organisational learning

Group learning is a lever, or a bridge between two dissimilar domains. It may not be the only means of linking the two, but it can be seen that the characteristics it shares with each create a valuable opportunity for translation between the domains.

8.5. Autonomy vs. Uniformity

The endorsement of group learning as a beneficial practice in the related literature approaches the universal. Senge, for example, opines that:

“Team learning is vital because teams, not individuals, are the fundamental learning unit in modern organizations.” (Senge, 1990)⁶⁷

Nevertheless, a cautionary note is discernible from the literature, and from the research described herein, warning that a balance between autonomy and uniformity must be established for organisational learning to thrive.

Within an organisation, groups may be created on a structural or disciplinary basis, or they may emerge and self-organise. Where a coherent and mutually-supportive group exists, a degree of motivation to support the common interest that is superior to the organisationally-driven alternative may be found (as discussed in Section 8.2). This dynamic may be nurtured and encouraged, and (as discussed in Section 8.4) it may be used to support the creation of habit. An organisation that seeks to leverage the group dynamic might attempt to structure itself in such a way as to arrange its workforce into teams, or to allow such teams to self-organise. Such a conclusion is drawn by Fang *et al.* (2010), for example, who assert that a structure based on “semi-isolated subgroups” will help to balance the explorative and the exploitative aspects of collective learning.

The potential obstacles to creating a group-led system are the Design and Implementation stages of the learning cycle. For groups to be able to learn (experientially at least) they must have sufficient autonomy to experiment. This view is supported by studies such as that of Paulsen and Hjertø (2014), who attest that autonomy of individuals and groups is beneficial for knowledge transfer. This

⁶⁷ Further substantiation for this assertion is not offered, and it is refuted by (e.g.) Schrage (1989) and Critchley and Casey (1996), who acknowledge the potential usefulness of the group-level dynamic but argue the case that it is a non-essential aspect of organisational learning.

autonomy might in practice be constrained (e.g. to experimentation within a certain limited field, or only with certain approvals in place) but it still requires the group to diverge in some way from common organisational practice.

Reeves (1996) coins the phrase “rogue learning” to describe middle management challenging of boundaries in the interests of learning and improvement. The question (he notes) is to what extent this practice should be allowed or encouraged. Regardless of any impact on authoritative structures, too much autonomy must eventually undermine organisational learning because it destroys commonality of practice, without which a collective change in behaviour is hard to create or maintain. This, it is postulated in Section 6.4, may be one of the barriers to orderly organisational learning typical to educational contexts (as represented in Figure 7.6). Experimentation must be permissible, but not without central oversight, approval and monitoring to determine which changes should be embraced more widely and which abandoned.

8.6. Summary and Conclusions

Group learning has an important role to play in helping to drive organisational learning as well as enhancing individual learning within the organisational context. Understanding the characteristics that it shares with its counterpart individual and organisational processes is critical to its effective use for their support. Provided the group size is sufficiently small then experiential learning can take place in the same sequence of activities as for individuals, albeit at a slower rate. Motivation to support group interests may be used to drive the cycle, and collective learning may in turn help to unite the group and improve adhesion. If the group is allowed sufficient autonomy to generate and implement its own learning ideas (subject to approval and control) then meaningful and effective learning may be achieved.

Organisations of significant size are too unwieldy to convene and collaborate in this manner; neither is it realistic to expect the common interest to provide much motivation. Nevertheless, the ideas generated and trialled at group level may be used to fuel the wider organisational learning process. Habit may also be formed and maintained at group level, bringing the collective learning process as close to involuntariness as is realistically achievable. The other problem that comes with size (also a barrier to serving the common interest) is the danger of depersonalisation; the perception of an “us” and a corporate “them”. The group is effectively the human face of the large company in that it consists of people with whom the individual member has direction interaction and collaboration. An organisation that fails to appreciate this ignores an opportunity to inspire greater cohesion and loyalty than is created by membership alone.

The key points made in this chapter are:

1. Motivation to support group interests is higher than for organisational interests because members generally identify with manageably-sized social or discipline-

based groups rather than the organisation.

2. Learning within a small, co-motivated group may resemble individual learning more than organisational, if learning activities are undertaken in the group.
3. Group learning may therefore be used to drive organisational learning provided that groups are given autonomy to learn.
4. There is a balance to be achieved between autonomy of organisational groups and uniformity of organisational practice.

9. Conclusions

This chapter summarises the research undertaken and acknowledges its limitations, before revisiting the conclusions drawn and considering the implications they have for organisational management and learning practice. The contribution made by the research and by this thesis to the collective knowledge is clarified, and recommendations made for further work necessary to derive further benefit from the ideas developed herein.

9.1. Summary of Research Conducted

The research exercise described herein was conducted in two phases, the first of which was an action research study designed primarily to demonstrate the feasibility of creating a “bottom-up” Learning Organisation by developing organisational learning capabilities. The second was a mixed methods research study designed to further explore a number of relationships and effects suggested by the first. The picture painted of organisational learning by the combined datasets delivered by the two phases is comprehensive and nuanced, and has a number of significant novel features. Its complexities have been explained herein by following four key threads through the research, as detailed in Chapters 5 to 8.

The first (action research) phase was not entirely successful in its aims of developing organisational learning capacity and strengthening learning culture within the host company, largely because of a precipitous downturn in the fortunes of the wider industry that progressively undermined cohesiveness and unity. However, a valuable dataset was gained that demonstrated different trends and dynamics at work within the study period. These data answered a different set of research questions and suggested a path for further exploration that ultimately led to the design and execution of the subsequent mixed methods study. It should be noted that elements of the action research dataset contribute significantly to the arguments developed herein.

The second phase of the research drew upon ideas that were emergent from the first to target motivation to learn collectively, and to support organisational and group interests as the main focuses. This study delivered some results that substantiated suppositions drawn from the action research phase, and others that were surprising. Most significantly, survey responses provided by organisations from different industries suggested disparities between the impediments to learning that those industries faced; something which has previously been overlooked in the development of learning models and theories.

Drawing on the data gathered by both studies, the arguments constructed through Chapters 5 to 8 each result in an induction regarding the nature of organisational learning. It is acknowledged that none of the findings are by any means conclusive; such being the nature of exploratory research (as discussed in Section 9.1.1). Nevertheless, each provides a consistent response to a wide range of questions raised in and around the central topics, and collectively they build a strong case for a novel theory of organisational learning represented by the “lemniscate” model proposed in Chapter 5.

Overall the research is concluded successful because:

- The theory developed has novel and potentially transformative aspects (as detailed in Section 9.4);
- The conclusions drawn also generate recommendations for the optimisation of organisational management and learning practice.
- The host company OGCom has enjoyed the benefits of the knowledge developed both during and since the research exercises.

9.1.1. Research Questions

The research questions raised in relation to the two phases of research became, to a degree, incidental to the key conclusions of the research (for which see Section 9.2)

because of its non-linear path. For the sake of good order however the questions are revisited below with responses provided where the research has provided them.

Research Question 1 (RQ1.1)

To what degree can the Kolb-esque “experiential” organisational learning model be discerned in operation at OGCom?

As discussed in Section 5.1, the key elements of Kolb’s cycle were discernible, but the steps of the cycle were not sufficient to describe the organisational learning process accurately. Consequently, amendments were proposed via the “lemniscate” model. The answer to RQ1.1 is therefore: partially.

Research Question 2 (RQ1.2)

If barriers to the effective functioning of the Kolb-esque cycle are removed, will engagement in the process naturally proliferate within the organisation, as a resonant effect of harnessing individual experiential learning?

As discussed in Section 6.1, such learning did not proliferate in the manner envisaged within the host Company within the duration of the study. This does not mean that such an effect cannot occur, but the idea that it must occur is found to be incorrect.

Research Question 3 (RQ1.3)

Does learning practice create learning culture; i.e. does enhancement of organisational learning result in the emergence of/increase in qualities evidencing the Learning Organisation disciplines (as per Senge, 2006)?

This question is unanswered, since (a) the change to the independent variable (i.e. enhancement of organisational learning) was insufficient to gauge a response and (b) some of the metrics for measurement of the response were undermined by the industry downturn. Section 7.1 examines the data gathered for other significant trends.

Research Question 1 (RQ2.1)

How ubiquitous is the motivation “gap” to support organisational interests?

Within the organisations and industries consulted, the effect was universal (as noted in Section 6.4). The diversity of the industries chosen makes a case for the further generalisability of this effect, but a larger sample (of industries) size would be necessary to substantiate the suggestion.

Research Question 2 (RQ2.2)

Does this motivation “gap” apply equally to member group (as perceived) interests?

The gap was found to exist for groups as it does for organisations (Section 8.2), but the amplitude was generally smaller, indicating a stronger inclination to support the interests of the group than for the organisation. Again, further research would be required to establish whether this is true of all industries/organisational contexts.

Research Question 3 (RQ2.3)

Are there any discernible differences in these trends between dissimilar industries?

As discussed in Sections 6.4 and 7.3, the industries studied did indeed show a number of discernibly different effects. Again, a wider sample of industries would be necessary to comment on the further generalisability of the effect.

9.1.2. Limitations

The greatest limitation of exploratory research is its inherent inability to provide conclusive proof of the theories it develops. As has been discussed in Chapter 3 however, this should not be seen as a limitation so much as a characteristic of the inductive stroke of a wider research cycle, in which the generation of theory is as crucial to the advancement of knowledge as the testing of theory. The theory developed herein

demonstrates rigour by using multiple reference points from past research and theory, as well as new data gathered for specific corroboration, to construct a series of complementary arguments. In a process that could be termed “dynamic triangulation” (since the measurements do not converge on a single point; more a single trajectory), each additional reference point that agrees with the overall theory provides greater confidence in its validity and accuracy.

Other specific limitations of the research studies are listed in Table 9.1, along with mitigatory measures and/or comments.

Table 9.1 Limitations of Research

Limitation	Mitigation/Comment
The action research was (unavoidably) conducted in a single setting, limiting generalisability of observations.	This limitation was mitigated to some degree by including other organisations of the same industry, and other industries, during mixed methods Stage 2.
Interventions applied during the action research were specific to the organisation and designed subjectively.	Interventions were designed to be as transferable as possible; and reviewed by the internal participant group.
Some metrics were discontinued (by OGCom) during the action research.	These metrics were not relied upon for any conclusions drawn.
Interpretation of all datasets involved a degree of researcher bias and subjectivity.	Mitigated by multi-layering observations from the different phases to support common conclusions. Also, interpreted trends from the action research were reviewed by the internal participant group.
Motivational drivers and magnitude are inherently elusive quantities to measure.	Evaluation of motivation was always based on comparative measures.
Selection of participant organisations/ industries for mixed methods Stage 2 was opportunistic.	The industries used were sufficiently dissimilar to illustrate the contrast highlighted by the relevant conclusion.
The combination of the datasets from the two different research phases was a bespoke process and not subject to explicit quality control measures.	This limitation is acknowledged and was unavoidable. The two datasets are not mixed, but instead observations drawn from each are used to support one another.

9.2. Summary of Conclusions

There are four key conclusions that are drawn from this research, each developed by means of a number of complementary observations and arguments and relating to the content of each of Chapters 5 to 8 in turn. These are:

1. That organisational learning is fundamentally different from individual learning because it is not involuntary⁶⁸ in the way that the latter process is, and because it requires the participation of different people/groups at different times. These anomalous aspects are addressed and illustrated by the “lemniscate” model proposed in Chapter 5 that shows organisational learning as a separate loop to “normal practice”.
2. That organisational learning is inherently difficult to establish and maintain because members’ motivation to support the common interest is lower (a) than their self-interest (which drives individual learning), and (b) than they will typically report. This is particularly problematic because the steps of the organisational learning process require greater effort (as noted in Conclusion 1, above).
3. That learning culture, which mediates the organisational learning process, and the apex of which is effectively synonymous with the Learning Organisation, is influenced by external factors as well as internal. The nature of the industrial context is important, as is the health of the industry in question. Efforts to establish or enhance such a culture that ignore the wider context can therefore only succeed fortuitously.
4. Organisational learning may be enhanced by harnessing the more natural dynamic of group learning. Group learning is a valuable phenomenon because it is not as susceptible to the challenges to organisational learning described in Conclusions 1 and 2 (above) and can in fact mimic the individual learning process. Group learning can then in turn be used to drive organisational learning (albeit with some loss of efficiency) in a number of ways; as discussed in Section 9.3.

These conclusions are tentative, arising as they do from exploratory (and therefore limited) data. They have been substantiated to as great a degree as is achievable (as Section 9.1 describes) within the confines of this research exercise; they would be

⁶⁸ Or rather, as discussed in Chapter 6, involuntary effects are weak.

enhanced and optimised by the further research ideas discussed in Section 9.5.

Why it is Inherently Challenging to Establish; and How it may be Enhanced

9.3. Implications for Practice

An important outcome of this research is the derivation of recommendations for organisational management and learning practice from the conclusions drawn. This is important both to ensure delivery of practical benefit to the academic discipline, and to obtain tangible benefit for the RE's host Company.

The following recommendations are made in order for the organisation seeking to develop or increase organisational learning capacity to derive maximum benefit from the "lemniscate" model and the associated conclusions presented in Section 9.2:

1. Understand the context and its implications for organisational learning

That different industries have different learning characteristics and challenges is a significant finding of this research, but it is one that has only been explored at a superficial level. Consequently, it is not currently possible for the prospective learning organisation to obtain some sort of industry profile to explain any specific pitfalls to avoid. The organisation may however consider questions such as:

- How competitive (within a given organisation or externally) is this industry?
- What staff turnover levels are typical to the industry?
- How altruistic is the industry (or discipline therein)? Do people generally join to support the interests of others?
- What is the current (and anticipated) health of the industry?
- Is it an industry in which change is driven internally or externally (by legislation for example)?

Such questions will help to identify and assess the context-specific challenges that the organisation should expect to face.

2. For each step in the learning cycle, consider who will be responsible

Whilst some steps of the cycle require action from all organisational members

(making observations, say), others must be undertaken by a more centralised person or group with a certain level of decision-making authority. The organisation should consider who or which role will be accountable for each step, which other parties should be involved in the activity, and the degree to which this activity is a formal part of their remit. A balance between bottom-up and top-down activities would be desirable, and commitment (of actions as well as words) to the ethos of learning should be visible from senior levels.

Care must be taken not to make any step reliant simply on a general instruction to try to do something whilst carrying out the (non-learning) roles for which people were engaged, because the inputs received are likely to (a) be the minimum level required, (b) pay lip service only to the requirement and (c) decline during busier periods.

3. For each step in the learning cycle, consider what will motivate the responsible party to act

Where an individual or group is specifically tasked with delivering learning or improvement, it is reasonable to expect their role(s) in the learning process not to be overlooked. For other members however, motivation, or a lack thereof, is critical to the success or failure of the cycle. This may be addressed to some degree by the presence of a strong learning culture, but that culture must inspire genuine commitment and positive action from the members if so.

Alternatively, it is conceivable that valuable learning inputs could be successfully incentivised. Incentives offered should ideally be sophisticated in nature, and commensurate with the learning that they are trying to promote. For example, if a gap is identified in a particular service offering, the individual(s) flagging the observation could be given the opportunity to undergo training or develop solutions to address the problem. Of course, more basic incentives (e.g. monthly “best

observation” awards) may also work; the organisation must understand its members and context well enough to know what will inspire and what will patronise.

4. For each step in the learning cycle, consider how the task can be best achieved

Each step in the cycle must follow a process that is appropriate for the organisation in question, and that will encourage habitual engagement. In particular, the stage that is pivotal to the learning being truly organisational is the implementation stage; this is also the activity that will ultimately affect or involve the entire organisation. It is essential that the organisation has an effective mechanism, system or systems in place to disseminate learnt material and effect changes in collective practice that will result in a discernible change in collective behaviour. If a particular procedure or policy document is reissued to codify some change and it is never read, then no collective learning can be said to have occurred.

5. Involve the membership

It is critical to the achievement of a culture of learning that the membership as a whole is engaged in the process and has visibility of beneficial outcomes to as great a degree as is possible. The benefits gained from flagging an observation in the organisational learning process are often too far removed from the individual concerned; Hartmann and Dorée (2015) liken the process to sending “a message in a bottle” out into the ocean. Greater engagement of the wider membership will encourage ownership by the collective of the outcome(s) of learning, and perhaps also inspire a greater sense of worth (to the organisation) in those involved. Those stages of the process which require the involvement of decision-makers need not only involve decision-makers for example.

6. Encourage group learning

While group learning is not an essential component of organisational learning, it

nevertheless provides an invaluable opportunity to encourage the habituation of learning practices. Creating group learning is generally achieved either by giving specific learning challenges to delineated groups, or by giving those groups targets for achievement and a free rein in determining the best strategy towards that end. Groups may be educated and encouraged to undertake reflective and experimental activities together or allowed to learn as best suits their members.

Organisational learning processes may benefit directly from group learning by (say) reviewing and assessing all observations raised within the group context for value as wider learning material, or indirectly by allowing groups to act as pilot schemes for improvements which can then be considered for wider roll-out. Either way, it is likely (as evidenced herein) that learning actions taken in the interests of the group will be greater, and more directly aligned to individual purpose, than those taken for the organisation.

7. Consider the appropriate degree of group autonomy

Hand in hand with group learning goes the establishment of limits of group autonomy. A balance must be established that is appropriate to the organisation and its context between allowing groups to experiment with the outcomes of their learning processes and maintaining overall control over a commonality of practice. Alternatively, groups may be allowed to propose and justify any changes that they consider beneficial to a central board (or equivalent) for approval. In any case, it must be remembered that some changes enacted will fail, and others result in negative emergent consequences. Testing changes on a group level may be a lower risk strategy than orchestrating change on an organisational level.

8. Promote a learning culture

Suggestions for the establishment of a Learning Organisation (for which read learning culture) are abundant; as discussed in Section 2.3. The points to reiterate,

and those most prominent in the pursuit of safety culture (as a parallel), are firstly that commitment to learning and achieving success collaboratively must be apparent at higher levels in the organisation; resources and funds made available, efforts recognised etc. This must go beyond calls to action from on high, which may by itself be perceived as buck-passing.

The second challenge is in making learning practice habitual and lasting without pestering people to the point of disenfranchisement. Learning must be perceived as a strategy towards an end that is genuinely better for all, individually and as a collective, rather than a corporate buzzword.

9.4. Contribution to Knowledge

The main, and most tangible, contribution that is made by this research to the collective knowledge on organisational learning is the “lemniscate” model proposed in Chapter 5 (and developed in subsequent chapters); and reproduced below.

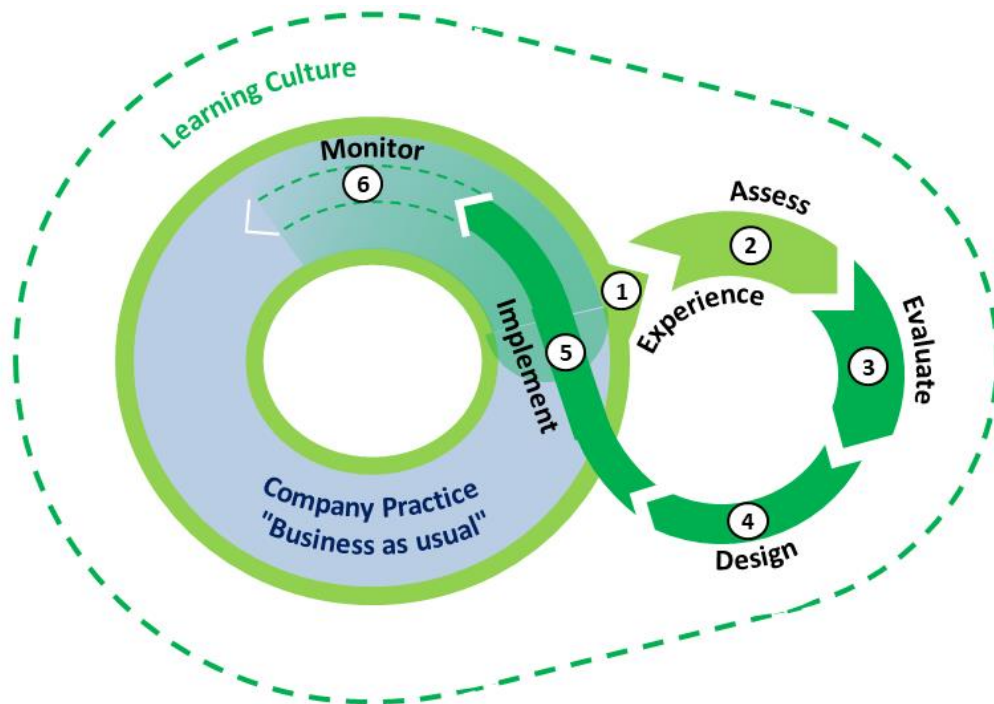


Figure 9.1 “Lemniscate” Organisational Learning Model

This model is a valuable educational tool because its shape (and dissimilarity from previous models) draws attention to some of the most important findings of this research, specifically:

- That, unlike individual learning, organisational learning is not simple-cyclic, and neither is there a strong involuntary function.
- That organisational learning draws from observations and ideas that are part of, but tangential to, the normal operational cycle of the business; learning is also fed back into this cycle, creating two symbiotic loops.
- That learning process steps are more numerous and harder to establish for large organisations due to the differing levels of authority typically required for each.

Other key findings of this research that make an original contribution to the collective knowledge are as follows:

The Criticality of Motivation

Organisational learning theories and models tend to make the assumption implicitly that learning will occur as naturally in organisations as it does in individuals, provided that suitable channels and processes are established.

What is widely overlooked, and what this research has demonstrated, is that organisational members are often motivated little by delivering learning and improvement to “the organisation”, particularly where the term is understood to refer to the corporate decision-making function. People will generally state that they want to learn (for various reasons), and that they generally want to belong to effective and efficient organisations; but this does not necessarily mean that their actions and efforts taken will reflect either desire. Solving the “motivation gap” is a major challenge to organisational learning.

The Context-dependency of Learning Challenges

The term “organisation” is so broad, it should perhaps be unsurprising that collective learning presents different challenges to different types. The industries consulted herein are not even as dissimilar as they might be to illustrate this point, since they are all “white collar” professions. What contrasting challenges, motivational or otherwise, might be found by studying organisational learning in a restaurant chain, say, or a more social organisation such as a sports club? However, the idiosyncratic nature of the learning challenges in different contexts is widely overlooked in organisational learning theory, a weakness common to many theories.

This research, and in particular the second stage of the mixed methods study, has shown how the context of the organisation can throw up differing impediments to

learning, and has highlighted the importance of applying a model that can accommodate these differences.

The Power of the Several

To identify group learning as important for organisational learning is not original. The contribution made by this research on this topic is to provide an explanation for why it is important, and why it is possible to use it to drive organisational learning. This is significant because it allows group learning to be channelled more effectively, and because it highlights the importance of establishing groups that are small enough to act in a co-motivated manner. It is hypothesised that there is a threshold group size beyond which collective learning will no longer mimic individual learning and instead resemble the “lemniscate” model. Although this threshold size requires further investigation and may well be context-dependent, it is valuable to understand that there is an upper bound.

9.5. Further Work

The natural successive stage to any inductive research would be corresponding deductive research to test specific hypotheses induced. Certainly, as acknowledged in Section 9.1.1, the sample sizes used herein are suitable only for hypothesis development, and the accumulation of more expansive datasets would do much to corroborate the ideas presented. In particular, it would be enlightening to observe organisational learning in a range of contexts, to test and challenge the fit of the “lemniscate” model and gauge the degree to which it is universal. It is likely that such research would find areas in which it can be refined or improved. The mixed methods Stage 2 survey could also be expanded to involve more participants, organisations and industries to provide greater confidence in the conclusions drawn herein regarding the “motivation gap”, and the difference in support for organisational and group interests.

In addition to these corroborative measures, there are a number of more tangential follow-on studies that are suggested by this work, and that could help to improve theory and, in particular, practice. The research questions they would seek to answer are:

At what point does the group become an organisation?

There may be a critical size⁶⁹ that a group can attain beyond which the human instinct to self-organise (such as it is) ceases to operate due to the complexity of interaction and therefore degree of removal from the outcome of action. This critical size also acts as a barrier to the recognition of personal benefit deriving from group success. Below the threshold, it is postulated that group learning functions in approximately the same way as individual learning, provided that all members are involved with the reflective and experimental phases of the cycle. Above the threshold, the organisation must employ different learning strategies and address the challenges illustrated by the

⁶⁹ Size not being the only factor necessarily; but one that has been shown to be influential.

“lemniscate” model. The threshold may very well turn out to be context-dependent; it would be valuable to identify and explore the variables that affect its variation.

How do different industries/contexts differ in their learning challenges?

The mixed methods Stage 2 results provide a strong impression that the impediments to organisational learning are not the same for all industries (although they can be described by different features of the “lemniscate” model). This impression could be reinforced and expanded much further by investigating more industries and establishing a framework for comparing the learning profiles of each. As it stands, motivation is a key aspect, as are the degree to which practice is uniform across the membership and the level of autonomy of organisational units; there may of course be others that merit investigation. There may be lessons that can be drawn between industries where the strengths of one can be used to alleviate the challenges of the next.

Do self-organised groups learn more effectively than artificially constructed groups?

There appear to be two ways in which groups emerge within an organisation; by construction, where a particular department or work team becomes a semi-social entity with which the members identify, and by self-organisation, where the boundaries of the group are established by the group themselves, and may ignore discipline, category and job function in favour of social compatibility. Studies have found group learning to enhance the individual learning of the group's members but have not differentiated between types of group (in terms of the reason/mode of formation). It may be the case that a constructed group, sharing a disciplinary interest, learns more effectively than a self-organised group. On the other hand, the fact that the self-organised group forms out of choice rather than necessity may be more significant for learning.

The other main area in which further work would be beneficial is the implications for

practice discussed in Section 9.3. A case study or perhaps action research study that used these recommendations as the specific basis for a programme of interventions would be invaluable in field testing the ideas arising from this research. Again, such a study (or ideally studies) could both corroborate and refine these recommendations to the benefit of theory and practice alike.

9.6. Reflections

The goal of developing learning capacity in organisations relates to the involuntary process in the individual however, in that it is (as was illustrated in Section 2.1) based on experiential learning type models. Proponents of organisational learning intend to create or enhance “involuntary” processes within the collective context because their purpose is to give the organisation the capacity to improve, adapt and change commensurately with its surroundings. The aim is not to attain any particular skill or learn any particular lesson, but to mine collective experience for items of value; to discard ineffective practice and retain the effective. Learning Organisation theorists have a subtly different focus in that they aim to develop in the organisation those competitively advantageous characteristics that learning affords the human.

Smith and Sharicz (2013) were quoted in Section 5.3 as making a statement that included as a qualifier that “...*fluid self-organizing networks are the natural state for humankind...*”.

This research process has led the RE to question whether humans are suited to association in large, purposeful organisations. It seems that we are able to organise ourselves efficiently within teams below a certain threshold size (to be determined) but beyond this level, when people become distanced from one another by, for example, organisational structure, geography or function, self-organisation is no longer a natural state. This is not to say that it is not a manageable state, but it is one that is destined to fail without constant effort. Humans can scale mountains, but beyond a certain altitude we are unable to survive without extensive assistance and this will continue to be the case until we descend back into the range to which our natural faculties are suited.

Organisational learning, similarly, is not a natural process in a large organisation. It may be achieved by rigorous and targeted effort, but such effort must be maintained

or it will revert back to negligible levels. The Learning Organisation, a state of existence of a company in which it is efficient at what it does, is responsive to new challenges, and inspires unity and cooperation in its members has been sighted too many times by respected academics and practitioners alike to be dismissed. However, like other desirable interactive phenomena (a “great” party, say, or a happy marriage) it may rely on ingredients at least some of which defy artificial creation. This is not to say that it is not worth trying to create fertile circumstances for such a relationship to appear, but it should be acknowledged that there may be a “spark” element that cannot necessarily be synthesised, or that may be extinguished.

An organisation seeking to establish processes and practice for organisational learning sets out on a journey of collective self-discovery. The actuality or location of the end destination may not be quite what was envisaged; neither may it in fact be an end but a preliminary peak that provides a view of greater hills beyond. The concept of the Learning Organisation may be a suitably inspiring mirage that ultimately allows the collective to embrace a travelling lifestyle in perpetuity.

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Appendix A. Summary of Social Science Philosophies

Table A.1 Overview of Philosophical Stances Relevant to Social Science Research⁷⁰

Philosophical School	Ontology		Epistemology ⁷¹		
	Reality is:	Knowable?	Forms of knowledge	Relationship between theory and observation	Relationship between researcher and subject
Realism	Objective	Yes	Abstract “universals”	Theory/laws are absolute regardless of whether they are observed	Objective knowledge is independent of research
Empiricism	Objective	Yes	Causal laws	Observation generates theory (deductive)	Objective knowledge is independent of research
Idealism	Subjective	No; knowledge is only subjective	Representative knowledge	Observation and theory are both interpretations	No objective knowledge is possible
Positivism	Objective	Yes	Causal laws, theory	Circular dependence (inductive/deductive cycle)	Objective knowledge is independent of research
Post-positivism	Objective	No – but false beliefs can be rejected	Probabilistic laws, theory	Observations may be used to disprove theories	Researcher influences knowledge
Interpretivism	Objective/ Subjective (linked)	Yes – but only subjectively so	Contextual knowledge	Observations deliver insight rather than theory	Researcher interprets knowledge
Humanism	Subjective	No; knowledge is only subjective	Empathetic knowledge	Observations deliver meaning rather than theory	No objective knowledge is possible
Critical research/ theory	Subjective (not pre-destined)	Only in contrast to what might otherwise have been	Relative knowledge	Theory contrasts state observed with other possible states	Researcher influences knowledge

⁷⁰ Paraphrasing Porta and Keating (2008), Gustavsen (2003), Bhattacharjee, 2012

⁷¹ Ritchie *et al.* (2013) identify three epistemological issues as central to social research: how knowledge may be acquired; the nature of “truth” discerned; and the relationship between the researcher and the subject/research.

Appendix B. Summary of Applied Research Parameters

Table B.1 Summary of Research Design Phase 1

Summary of Design Challenges (Action and Design-based Research)			Applied Solution/Mitigation
Category	Problem	Specific Concern	
Research Characteristic 1	Pursuit of “worthwhile practical purposes”	Solve authentic problems	<ul style="list-style-type: none"> Authenticity of the problem checked against existing literature Host company initial consultation and stakeholder review
		Empower participants to do likewise	<ul style="list-style-type: none"> Collaboratory/participatory design (see below)
		Actions embedded in humanistic value system	<ul style="list-style-type: none"> Research aims intend to bring mutual value to all members Interventions challenged for ethicality and minimisation of adverse impact
Research Characteristic 2	Collaboration/participation	Inclusion of participants in research in evaluation and decision-making processes	<ul style="list-style-type: none"> Participation and feedback sought from project management/ senior project management group Regular meetings held to update group with progress Group selected on basis of (expected) greater stability during research period.
		Establishment of ethical rules	<ul style="list-style-type: none"> Option to decline to participate made clear in all relevant data collection instances or participatory situations “Complaint” procedure established referring complainant to senior management Participants made aware of complaint procedure
Research Characteristic 3	Responsiveness in execution	Action research cycle maintained continuously	<ul style="list-style-type: none"> Three, six-month cycles planned with periodic data collection Data analysed as period end approaches and subsequent period planned
		Input from participants	<ul style="list-style-type: none"> Summary of data analysis provided to participant group Intervention plans discussed and agreed Option for more frequent/one-off changes maintained if circumstances dictate
Research Characteristic 4	Connection of theory and praxis	Balancing action and reflection	<ul style="list-style-type: none"> Six-month action cycle gives reasonable duration for action to have effect Progress and certain metrics monitored throughout period to facilitate period-end reflection stage
		Generating theoretical knowledge	<ul style="list-style-type: none"> Simplicity of research construct and aims Literature reviewed to ensure value and fit of research areas

Summary of Design Challenges (Action and Design-based Research)			Applied Solution/Mitigation
Category	Problem	Specific Concern	
Validity	Dialectic validity	Potentially complex confounding factors and design flexibility	<ul style="list-style-type: none"> Measurement of industry and company factors during research period to demonstrate stability Measurement of utilisation of other comparable company systems during research period to detect changes external to research
	Critical validity	Measurement/demonstration of change	<ul style="list-style-type: none"> Use of quantitative/semi-quantitative data as well as qualitative Triangulation of measurements Use of ethnographic observations to support
Reflexivity	/Reflexive validity	Researcher influences outcomes	<ul style="list-style-type: none"> Researcher influence acknowledged Interventions implemented by actions of participant group rather than researcher to support generalisability and de-personalise
Reliability	Replication	Replication of a particular intervention is problematic	<ul style="list-style-type: none"> Interventions designed/chosen with generalisability in mind Interventions are non-industry-related Application of interventions in other settings may differ; but the aim is to demonstrate possibility rather than specific result
	Interpretation	Repeatability of interpretation drawn from data	<ul style="list-style-type: none"> Interpretations of data analysed are discussed and checked with participant group for corroboration
Generalisability	External validity	Applicability/transference to other contexts	<ul style="list-style-type: none"> Research construct is non-context dependent Outcomes in other settings may differ; but the aim is to demonstrate possibility rather than specific result
Ethicality	Researcher-practitioner (potential) conflict	Resolution of dual objectives	<ul style="list-style-type: none"> Research and practice objectives are well aligned, since the aim is to demonstrate particular beneficial change is a possibility Process overseen by industrial supervisor of research who also has operational responsibility for office.
	Informed consent	Duration of study may exceed duration of consent	<ul style="list-style-type: none"> Consent gathered with each data collection exercise rather than assumed for entire duration
	Protection of anonymity	Participatory nature conflicts	<ul style="list-style-type: none"> External reporting anonymised Sensitivity of internal information kept minimal
	Right of participants to withdraw	Withdrawal may exclude participants from non-research activities	<ul style="list-style-type: none"> Consultative/participatory fora established as independent from existing fora. Option to withdraw made clear periodically Complaint procedure established and communicated

Table B.2 Summary of Research Design Phase 2

Summary of Design Challenges (Mixed Method/Exploratory Research)			Applied Solution/Mitigation
Category	Problem	Specific Concern	
Research Characteristic 1	Rigorous selection and execution of exploratory quantitative/qualitative components	Cases for study should selected to amplify the effect measured	<ul style="list-style-type: none"> Industries with different structures and agendas chosen to contrast dynamic observed at host company
		Clear definition of concepts for measurement	<ul style="list-style-type: none"> Relative measures relating to motivation to support different level entities defined (individual, group, organisational)
		Hypotheses/expectations	<ul style="list-style-type: none"> Hypotheses/expectations presented
		Openness to entirely new explanations.	<ul style="list-style-type: none"> Qualitative input invited during quantitative data collection in order to allow new aspects to emerge
		Focus on generation of novel, valuable, insightful and plausible theories, hypotheses or viewpoints	<ul style="list-style-type: none"> Numerous, small samples chosen for contrast to amplify effects rather than for extensive statistical analysis Phase 2 outputs to complement observations from Phase 1 to build integrated theory
Research Characteristic 2	Combination of elements	Research questions must relate to both qualitative and quantitative methods	<ul style="list-style-type: none"> Research focus (motivation) is inherently subjective and unmeasurable. Study focuses on <i>relative</i> motivation towards different level entities; this concept is applicable in both qualitative and quantitative contexts. The quantitative incarnation will ask participants to express likelihood of undertaking purposeful actions on behalf of different entities, and then company relative scores per participant.
		Sequencing challenges: planning for integration of data, scores etc.	<ul style="list-style-type: none"> Emergent design development used but based on preconceived plan for second stage Qualitative and quantitative “measures” aligned in that motivation for group/organisational activities is assessed relative to other activities (in either paradigm).
		Management of conflicting data	<ul style="list-style-type: none"> Quantitative stage will invite participants to record further comments (non-compulsorily) to inform consideration of conflicts Exploratory research can tolerate conflict; report will attempt to explain any conflict recommended further studies
Research Characteristic 3	Practical Issues	Time and resource management	<ul style="list-style-type: none"> Non-labour-intensive data collection methods to be used
		Communication Reporting	<ul style="list-style-type: none"> Expected outcomes reported Standard diagrammatic and typographic reporting methods used

Summary of Design Challenges (Mixed Method/Exploratory Research)			Applied Solution/Mitigation
Category	Problem	Specific Concern	
Validity	Dialectic validity	Validity is served by demonstrating robustness and plausibility of the induced connection/explanation.	<ul style="list-style-type: none"> Focus is on building a strong and logically defensible case based on triangulated data. Data targeted that will test robustness and plausibility from a number of angles.
		Argument logic dependent on sequence, dominant stage, interface point etc.	<ul style="list-style-type: none"> Clear and coherent research design, definition of concepts and supporting arguments Preliminary plans for second (quantitative) stage established at outset
		Dialectical reasoning supports exploratory enquiry.	<ul style="list-style-type: none"> Intention is to challenge existing Organisational Learning models by identifying an inadequacy central to all (encountered) New (proposed) relationship submitted for testing by others
	Critical validity	Coherence/compatibility of mixed method datasets	<ul style="list-style-type: none"> Quantitative stage data to echo and build upon themes from qualitative stage Qualitative input invited during quantitative data collection to allow themes to be corroborated/reinforced
Reflexivity	/Reflexive validity	High standard of honesty, transparency and self-reflexivity required.	<ul style="list-style-type: none"> Researcher's situatedness, limitations and biases considered and influence acknowledged wherever possible Researcher expectations stated at outset
Reliability	Replication	Industrial context limits repeatability	<ul style="list-style-type: none"> Data to be gathered from multiple contexts within same industry, and from multiple industries. Repeatability is therefore explicitly tested and accommodated in quantitative data analysis.
	Interpretation	Qualitative data interpretation	<ul style="list-style-type: none"> Qualitative data collection and analysis methods to be applied rigorously and with consideration of inherent limitations. "Accessible" techniques to be used (as opposed to highly subjective, labour intensive methods such as discourse analysis) Quantitative data to be used to support/challenge qualitative interpretations.
Generalisability	External validity	Limited due to typically small sample sizes	<ul style="list-style-type: none"> Data to be collected across a number of industrial settings. Size of samples limit conclusivity of observations made but multiplicity of settings supports generalisability. An objective of the research is to recommend further work for corroboration of findings in other settings.

Summary of Design Challenges (Mixed Method/Exploratory Research)			Applied Solution/Mitigation
Category	Problem	Specific Concern	
Ethicality	No challenges specific to exploratory-sequential mixed methods		<ul style="list-style-type: none"> • Standard ethical principles applied and measures taken. • Informed consent obtained for all data collection; anonymity protected internally and externally. • Right to withdraw communicated. • Data protected and stored on non-company systems. • Process overseen by industrial supervisor of research who also has operational responsibility for office. • Sensitivity of internal information kept minimal • Complaint procedure established and communicated

Appendix C. Action Research Data: Survey

Table C.1 Summary of Survey Scoring Data

[illegible]

Table C.2 Summary of Survey Commentary Data

				Comments on Disciplines								Comments on Disciplines								Comments on Disciplines								Comments on Disciplines																			
				Project learning comments				Company learning comments				General Comments								Project learning comments				Company learning comments				General Comments								Project learning comments				Company learning comments				General Comments			
No.	Category (seniority)	Employee/Contractor	Gender	Measurement 1 - AR0				Measurement 2 - AR1				Measurement 3 - AR2				Measurement 4 - AR3																															
1	3	E	F	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank											
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3	4	E	M	Good sel	1- Lesson 1- Lunch	Optional	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank												
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8	2	C	F	I have ne	We are k	there are	I am hear	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank												
9	3	C	F	Blank	Learn on	Should b	I don't ret	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank												
10	2	C	M	Blank	Generally	Sharing g	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank												
11	3	E	M	To say c	I feel tear	I feel tear	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank												
12	3	E	M	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank												
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14	6	C	M	The comp	In my ex	As mentis	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank												
15	6	C	M	Blank	If a new	it depend	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank												
16	2	E	M	my exper	the team	I didn't	nc I feel that	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank												
17	5	E	F	Blank	Within M	I think mc	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank												
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19	3	E	M	Overall,	Team lea	Yes, as a	Sometim	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank												
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21	5	E	M	Some toc	Teams g	Informati	People a	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank												
22	6	C	M	In some	An exam	As with	I have en	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank												
23	5	E	M	Blank	Within fl	it is quite	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank												
24	2	C	M	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank												
25	2	C	M	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank												
26	5	E	F	Difficult	t I feel	fees The	intro Neutral	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank												
27	4	E	M	Blank	Teams le	The learn	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank												
28	2	C	F	Blank	very goo	Again ver	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank												
29	4	C	M	The proje	A new le	Regular	I Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank												
30	2	C	M	it depend	in genera	informati	it has is	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank												
31	2	E	F	concept	Projects	Varies fo	general	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank												
32	2	E	F	I don't r	This dep	Don't thin	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank												
33	2	C	M	Townhall	Experie	All projec	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank												
34	5	E	M	N/A	N/A	N/A	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank												
35	8	F	M	Disregarded				Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank												
36	6	C	F	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank												
37	2	C	M	The Com	The proje	I don't th	The proje	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank											
38	5	E	F	The com	I am not	I think in	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank											
39	4	E	M	Blank	Learnings	Sharing	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank												
40	6	C	M	Blank	Obvious	Compare	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank												
41	6	E	F	Blank	Not sure	Not sure	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank												
42	2	E	M	Operator	A numbe	I consid	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank												
43	3	C	M	Regular	I My team	I have no	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank																												

Appendix D. Action Research Data: HR Data System

Table D.1 Summary of HR Data Collected

	Action Research Cycle 1						Action Research Cycle 2						Action Research Cycle 3					
Head Count	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
Number in Company (London)	442	413	-	367	-	357	-	-	-	-	-	305	-	-	-	-	-	254
Staff	271	257	-	227	-	219	-	-	-	-	-	198	-	-	-	-	-	183
Contractor	171	156	-	140	-	138	-	-	-	-	-	107	-	-	-	-	-	71
"Learning Lunches" Held	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
Held this month	2	1	1	2	0	0	2	3	3	2	1	4	6	4	3	3	5	4
Average attendance	30	25	30	25-30	-	-	20-24	22-28	20-27	25-30	24	18-30	22-32	25-30	22-24	16-25	22-30	25-30
Total in cycle	6						15						25					
Training requests - London	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
Submitted this month	4	2	1	0	BUDGET CANCELLED - NO DATA													
Total cost (excl. man-hours)	910	2000	250	0														
Approved this month	2	0	0	0														
Total cost (excl. man-hours)	650	0	0	0														
Internal Training Programme	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
Applications this month	0	3	1	1	0	PROGRAMME SUSPENDED - NO DATA												
Online Learning Platform Usage	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
Number of log-ins this month	DATA NOT MADE AVAILABLE																	
Number of users this month																		
Number of lessons completed this month																		
Modules under development																		

Appendix E. Action Research Data: System Usage Data

Table E.1 Summary of Lessons Learnt System Observations and User (Project) Data

Lessons Learnt	Prior	Action Research Cycle 1						Action Research Cycle 2						Action Research Cycle 3					
		Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
Total on system (cumulative)	18	27	100	103	133	133	144	144	154	156	157	158	178	200	202	206	208	208	218
Submitted this month - globally	-	9	73	3	30	0	11	0	10	2	1	1	20	22	2	4	2	0	10
Submitted this month - London	-	8	17	2	14	0	0	0	2	1	0	0	20	17	2	4	1	0	6
Submitted this month - non-London	-	1	56	1	16	0	11	0	8	1	1	1	0	5	0	0	1	0	4
Projects logging this month	3	2	8	2	4	0	3	0	2	2	1	1	3	3	2	3	1	0	1
Total projects logging (cumulative)	3	5	13	15	19	19	22	22	24	26	27	28	31	34	36	39	40	40	41
New projects logging this month	3	2	7	2	3	0	2	0	1	1	1	0	3	1	2	3	0	0	1
Total new projects logging (cumulative)	3	5	12	14	17	17	19	19	20	21	22	22	25	26	28	31	31	31	32

Table E.2 Summary of QMS Online System Log-ins and User Data

		TOTAL LOG-IN COUNT													TOTAL USER COUNT												
		Australia	France	India	Indonesia	Ireland	Malaysia	Norway	UAE	Aberdeen	London	USA	Other	TOTAL	Australia	France	India	Indonesia	Ireland	Malaysia	Norway	UAE	Aberdeen	London	USA	Other	TOTAL
AR Cycle 1	Jan-15	48	18	0	25	65	7	43	13	136	133	66	11	565	80	7	0	2	33	1	54	13	6	58	8	5	267
	Feb-15	72	28	1	39	44	13	33	17	140	120	42	15	564	80	8	1	2	22	1	33	16	6	52	10	4	235
	Mar-15	54	13	0	41	48	23	38	20	147	137	58	5	584	92	13	0	2	24	2	44	20	10	61	6	5	279
	Apr-15	55	16	10	29	43	15	33	34	122	119	66	3	545	40	10	4	19	27	13	17	26	75	57	48	3	339
	May-15	51	23	22	25	32	14	26	16	116	110	46	9	490	39	10	9	14	13	10	18	10	64	55	33	7	282
	Jun-15	77	17	8	18	36	10	27	21	89	110	36	2	451	48	11	6	10	19	8	20	14	55	50	31	2	274
	Jul-15	83	4	11	12	27	5	14	10	89	76	38	4	373	55	3	5	8	20	4	12	7	53	37	30	4	238
	Aug-15	139	7	12	21	18	11	13	16	95	98	55	13	498	84	5	8	13	13	7	10	10	62	53	47	13	325
AR Cycle 2	Sep-15	37	11	7	14	59	5	17	14	121	72	44	19	420	25	6	5	10	30	3	12	11	80	37	35	15	269
	Oct-15	50	12	4	17	32	11	28	10	69	84	44	8	369	40	6	4	12	15	9	15	9	44	44	31	6	235
	Nov-15	59	1	1	18	22	12	11	20	93	94	48	6	385	44	1	1	15	12	11	9	14	59	46	34	6	252
	Dec-15	46	6	6	15	19	3	12	6	79	58	30	6	286	36	4	1	11	16	3	8	4	55	27	27	4	196
	Jan-16	44	6	5	14	27	2	23	9	97	96	43	8	374	30	5	5	11	15	2	14	8	66	52	30	4	242
	Feb-16	39	2	7	18	29	5	15	11	94	79	33	7	339	34	2	5	12	21	5	11	9	56	46	29	7	237
AR Cycle 3	Mar-16	32	2	1	17	23	6	7	13	93	71	34	10	309	24	2	1	12	16	6	5	11	49	38	24	9	197
	Apr-16	19	7	2	9	14	9	16	9	79	66	31	7	268	17	6	2	7	13	8	12	8	55	39	21	4	192
	May-16	32	8	1	4	24	4	9	7	112	70	34	4	309	25	4	1	3	15	4	8	6	72	46	26	4	214
	Jun-16	36	2	1	2	17	5	7	10	73	60	28	9	250	26	1	1	1	14	3	6	7	45	36	22	8	170
	Jul-16	31	2	0	4	14	0	4	15	53	54	58	7	242	25	2	0	4	8	0	3	8	41	38	45	5	179
	Aug-16	29	0	2	9	14	2	4	15	58	34	37	7	211	21	0	2	6	9	1	4	10	40	24	34	7	158
Average		51.7	9.25	5.05	17.6	30.4	8.1	19	14.3	97.8	87.1	43.6	8	392	43.3	5.3	3.05	8.7	17.8	5.05	15.8	11.1	49.7	44.8	28.6	6.1	239
Proportion		13%	2%	1%	4%	8%	2%	5%	4%	25%	22%	11%	2%	100%	18%	2%	1%	4%	7%	2%	7%	5%	21%	19%	12%	3%	100%

Table E.3 Summary of Online SOS System User Data

	Action Research Cycle 1						Action Research Cycle 2						Action Research Cycle 3					
	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15	Jan-16	Feb-16	Mar-16	Apr-16	May-16	Jun-16	Jul-16	Aug-16
OGCom London	234	234	241	233	244	216	222	217	207	152	162	162	154	128	148	128	106	92
OGCom Other	11	14	13	7	13	4	12	3	5	1	7	8	8	3	8	5	2	1
Non-OGCom	90	108	74	101	93	84	93	87	83	64	73	71	63	60	63	48	55	57
Total	335	356	328	341	350	304	327	307	295	217	242	241	225	191	219	181	163	150
% OGCom	73%	70%	77%	70%	73%	72%	72%	72%	72%	71%	70%	71%	72%	69%	71%	73%	66%	62%
London Observations																		
%Safe	39%	38%	39%	28%	42%	38%	43%	41%	38%	41%	39%	40%	44%	48%	47%	48%	48%	46%
%Unsafe	61%	62%	61%	72%	58%	62%	57%	59%	62%	59%	61%	60%	56%	52%	53%	52%	52%	54%
London Observations																		
Total from mandated users	222	219	225	224	233	207	216	210	198	149	157	159	147	124	138	117	96	84
Total from non-mandated users	12	15	16	9	11	9	6	7	9	3	5	3	7	4	10	11	9	8
% from mandated users	95%	94%	93%	96%	95%	96%	97%	97%	96%	98%	97%	98%	95%	97%	93%	91%	91%	91%
% from non-mandated users	5%	6%	7%	4%	5%	4%	3%	3%	4%	2%	3%	2%	5%	3%	7%	9%	9%	9%
Total users	174	174	193	187	189	185	180	172	173	129	134	132	128	116	116	103	88	76
Observations per user	1.34	1.34	1.25	1.25	1.29	1.17	1.23	1.26	1.20	1.18	1.21	1.23	1.20	1.10	1.28	1.24	1.19	1.21
Mandated users	165	163	184	178	180	179	176	167	168	126	130	130	123	113	110	97	84	71
Non-mandated users	9	11	9	9	9	6	4	5	5	3	4	2	5	3	6	6	4	5
Number of uses per user																		
1	143	136	162	161	161	165	154	153	155	119	115	118	116	107	101	92	81	68
2	21	28	21	20	18	18	21	10	14	5	16	10	9	7	10	7	4	6
3	3	6	7	3	6	0	3	7	2	3	2	1	1	1	1	2	1	0
4	3	2	1	0	3	1	0	1	1	1	0	1	0	1	3	1	0	1
Over 4	4	2	2	3	1	1	2	1	1	1	1	2	2	0	1	1	2	1
% single use	82%	78%	84%	86%	85%	89%	86%	89%	90%	92%	86%	89%	91%	92%	87%	89%	92%	89%
% double use	12%	16%	11%	11%	10%	10%	12%	6%	8%	4%	12%	8%	7%	6%	9%	7%	5%	8%
% more	6%	6%	5%	3%	5%	1%	3%	5%	2%	4%	2%	3%	2%	2%	4%	4%	3%	3%
Total no in company	431	413	399	367	362	357	345	333	322	315	309	305	293	284	273	267	262	254
Total no mandated	214	204	203	198	192	188	182	175	174	162	155	149	142	135	128	121	114	107
Total no non-mandated	217	209	196	169	170	169	163	158	148	153	154	156	151	149	145	146	148	147
% on mandated projects	50%	49%	51%	54%	53%	53%	53%	53%	54%	51%	50%	49%	48%	48%	47%	45%	44%	42%
% of OGCom using system	40%	42%	48%	51%	52%	52%	52%	52%	54%	41%	43%	43%	44%	41%	42%	39%	34%	30%
% Mandated using system	77%	80%	91%	90%	94%	95%	97%	95%	97%	78%	84%	87%	87%	84%	86%	80%	74%	66%
% non-mandated using system	4%	5%	5%	5%	5%	4%	2%	3%	3%	2%	3%	1%	3%	2%	4%	4%	3%	3%

Appendix F. Action Research Data: Observation Log

Table F.1 Overview of Ethnographic Observation Log

	Action Research Cycle 1						Action Research Cycle 2						Action Research Cycle 3					
	Mar 15	Apr 15	May 15	Jun 15	Jul 15	Aug 15	Sep 15	Oct 15	Nov 15	Dec 15	Jan 16	Feb 16	Mar 16	Apr 16	May 16	Jun 16	Jul 16	Aug 16
1										Evē Be		Inv Em						
2	PM me	CEO s								Innova								
3	ITS C F						ELT me					Launc						
4	Interco					IT and			Ch: Res	Na MT		Tec QM						
5			Team						Paper		CEO (V							
6		CEO s						CEI Leg									MIP ro	Q & A
7		C. Lyn						CEO si		Concu								
8							Pep ta				IT kit s	Emplo						
9		Team						Engine	Empl						Global			
10										Techn		Learni			Compe			
11						Region	Local c											
12									Pep ta			Knowl						
13								News	Navisi									
14					SAFE r					Core v	Contra			Strateg				
15		PI St A								CEO (V		Me LL	CoI Saf					
16	Target						Pep ta		Region	Pep ta		L'n'L c						
17																		
18			Launc	Triton					Pep ta									
19				Sa ELO													Projec	
20	Tra Ext	Feedb							Ration		Lor Tre							
21					CV, Pep					Pep ta				Sugges				
22				Le Onsl						Empl		LL Sup						
23		COO s						T&I up	One-st	Person								
24	Lesson																	
25																		
26	Reduce		Organ	Safety														
27	Intran		Pep ta						Christi					Enviro				
28							Intran	Integri										
29		HSE P									Briefin							
30		Envirc		Acquis					Engine									
31															Ethics			

- Observation relating to learning
- Observation relating to re-organisation of Company
- Observation relating to organisation-wide communications
- Observation relating to Company initiatives and models
- Observation relating to changing policies, processes and procedures
- Observation relating to implementation of technology
- Weekend

Appendix G. Mixed Methods Data: Stage 1 (Qualitative)

Table G.1 Overview of Qualitative Data Collected

Topic/question	Participant No.									
	1	2	3	4	5	6	7	8	9	10
1 Understanding of "Learning Organisation" and Company status as same What do you understand by the term "Learning Organisation"? Do you think of OGCom as a learning organisation? Why/why not? What is your frame of reference?	Oppor	Like to	Key po	No ide	Trying	Haven	Have A	Blurry	Have r	Learni
	Oppor	No. Pe	To a d	Person	The co	Probal	For en	It can	Guess	Send a
	Previo	Backg	Differ	Gradu	Summ	Multit	Mostly	Intern	Four	Numb
2 Usage of Company systems and opinion on same. Have you used/how have you used lessons learnt system? What do you think of the system? Have you used/how have you used SAFE system? What do you think of the system? Have you used/how have you used iMap system? What do you think of the system?	Every	Looked	No-ha	No	Under	Not m	No	Yes, sh	Not co	A lot o
	Not us	Better	Higher	Not us	Doesn	Teams	No op	Very g	Aware	Young
	Have u	Have v	System	Yes - w	Yes, w	Only o	No bur	Yes, bu	Read i	Aware
	Doesn	Tend t	Gener	Good	Quite	In real	Used o	It is a g	You ha	Not re
	Good	Twice	Yes, us	Since v	Yes, fo	Yes	Used b	Yes, ar	Yes	Not us
	Fairly	Conce	Easy to	Really	It's a l	Not fit	Access	Good	Conte	Not us
3 Motivations for individual and organisational learning What motivates you to learn (personally)? What motivates you when you're at work (in general)? How motivated are you in work at the moment? To what degree would you say that you are motivated to improve Company fortune? Have you been subject to any redundancy evaluations/consultations?	Person	Somet	Need t	Interes	Improv	If ther	Gainin	Being	Interes	Stretc
	As a co	Resolv	Simple	Quite	Use ne	Financ	Get a g	Not th	Focusi	Not ne
	At the	Not gr	Moral	Propos	Good	Difficu	About	I woul	Last fe	Very n
	Willing	Enjoy	Suppo	Don't	In the	Consta	Think	Yes - b	Defini	Yes, th
	N/A - c	Yes - n	No	No - a	No	Last ye	Yes	Yes - c	N/A - c	N/A - c
4 Identification with Company groups or sub-groups Do you identify yourself as part of a group/community within OGCom? How large a group/community?	Lots of	Think	Direct	Yes - b	Bit of	That's	Suppo	Yes, so	Yes	Yes, b
	Few g	Young	Relativ	Previo	Work	Sit bes	Identif	Conne	Survey	Onsho
5 Confirmation of agreement with system principles Do you agree/disagree with the following: - Safety awareness is critical in this industry - Quality management is essential to effective engineering - A company must learn in order to survive	Yes - c	Yes	Agree	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Yes	Absolu	Agree	Not es	Yes	Yes	Yes	Yes	Yes	Yes
	Yes, th	Yes	Agree	Yes	Yes	Probal	Yes	Yes	Yes	Yes

[Colour bandings reflect commonalities of response]

Appendix H. Mixed Methods Data: Stage 2 (Quantitative)

Table H.1 Overview of Quantitative Data – Industry 1

[illegible]

This table shows the (anonymised) data collected from the participants from the three organisations (denoted A, B and C) from Industry 1 – Oil and Gas Engineering Consultancies